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Environmental Protection Agency 1981-1990 ADP Requirements Study. Consolidated Systems Study Volume II. Detailed Report

Informatics, Inc, Rockville, Md.

Prepared for

Environmental Protection Agency, Washington, D.C.

14 Dec 77

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ENVIRONMENTAL PROTECTION AGENCY 1981 — 1990 ADP REQUIREMENTS STUDY

Consolidated Systems Study

Volume II

Detailed Report

Prepared For:

Environmental Protection Agency
Management Information and Data Systems Division
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The purpose and objectives of the Environmental Protection Agency (EPA) Automated Data Processing (ADP) planning activities are to obtain the most cost-effective computing/telecommunications resources to meet EPA's computing requirements for the 1981 through 1990 time period. A detailed system study was performed, which identifies the current and projected ADP requirements for the period 1981 through 1990. Each ADP activity is identified ~~utilizing~~ Zero Based Budget (ZBB) decision units and then projected ~~utilizing~~ a multiple scenario approach. The final documents of this report are:

Consolidated Systems Study: Volume I - Executive Management Summary; Volume II - Detailed Report; Volume III - Appendices including microfiche details (3) fiche.
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VOLUME II
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SECTION 1

INTRODUCTION

1.1 PROJECT PURPOSE AND OBJECTIVES

The purpose and objectives of the EPA ADP Planning Activity are to obtain the most cost effective computing/telecommunications resources to meet EPA's computing requirements for the 1981-1990 time period. EPA has developed a comprehensive plan which follows the Office of Management and Budget (OMB) Circular A-109 (Major System Acquisition) process. The EPA plan addresses:

- Detailed ADP activity study with total management participation to establish short and long term needs.
- Detailed study of the current and projected telecommunication needs of the agency.
- Study of the impact of conversion to different hardware in terms of cost and time.
- Development of an ADP acquisition strategy to obtain the necessary computing/telecommunication resources.
- Generation of a Request for Proposal (RFP) to develop alternative system design concepts to meet EPA's needs.
- Demonstration of these design concepts to reduce risk and to determine total cost.
- Procurement of the required resources and services which provide the greatest benefit to the government.

In conjunction with this overall plan, EPA contracted with Informatics to assist them in performing the detailed ADP requirements analysis for the years 1977 through 1990. This contract has to date resulted in the following documentation:

- Detailed methodology and plan for conducting the ADP requirements study and for making long term projections of needs. Titled Phase I Final Report, dated April 8, 1977.
- Consolidated System Study dated December 14, 1977, which presents the detailed current EPA computing workload and projects that workload for the years 1979-1981-1985-1990.
- Consolidated Telecommunications Study dated December 14, 1977, which presents the detailed current telecommunications workload by location and projection of future workload by location for 1979-1981-1985-1990.
- Conversion Study dated December 14, 1977, which presents the impact and planning requirements for the agency in converting existing ADP activities at Washington Computer Center (WCC)-COMNET and National Computer Center (NCC) facilities to upgraded equipment.

This document is the Final version of the Consolidated System Study and presents a mission and ADP workload analysis from the current (1977) period through 1990. In addition, this document provides an analysis of alternative future trends in the use of ADP for the agency and a plan for future tasks in the computer acquisition process under OMB A-109 guidelines. This document, in conjunction with the Consolidated Telecommunications Study and the Conversion Study, represents the EPA statement of needs for the current and future time periods.

The contents of this document address the following:

- Current ADP workload and an analysis of agency missions and programs with the supporting roles performed by ADP activities.
- Projected ADP workload for the period 1979 through 1990 with an analysis of changing agency missions and programs supported by ADP activities.

- Summary of mission changes and trends in ADP usage over future periods through 1990.
- Growth histories of EPA and other Federal agencies in ADP utilization.
- Recommended planning considerations for the remainder of the computer procurement process under OMB A-109 guidelines.

This report represents the results of an intensive data gathering effort at all levels of EPA, including headquarters, regional offices, and laboratories. It provides an analysis of this data and a projected statement of ADP processing requirements and needs through the 1990 planning time period for each of several alternative future scenarios.

1.2 REPORT ORGANIZATION AND CONTENT

This report is Volume II of a three part set covering the Consolidated Systems Study. Volume I is the Executive Management Summary and Volume III is the Appendix with supportive detail methodology and tables. This report is organized as follows:

- Section 1: introductory summary of project purpose and objectives; report content and organization.
- Section 2: summary of the methodology utilized in data gathering, organizing, and projecting future ADP workload.
- Section 3: mission and workload analysis for current year (1977) values for each AA and DAA level office, including regions and staff offices.
- Section 4: projected ADP workload, program changes, and costs for the future period through 1990 with values for each AA and DAA office, regions and staff offices.

- Section 5: major conclusions of the systems study including a summary of mission and program changes, trends in ADP usage, scenario probabilities, and macro influences on future ADP usage.

- Section 6: recommended planning considerations for further steps in the computer procurement cycle beyond the present phase, i.e., where we go from here.

SECTION 2

STUDY METHODOLOGY

2.1 INTRODUCTION

The methodology used for the development of the consolidated systems study consisted of:

- Study of existing ADP studies.
- Series of interviews with EPA management, systems managers and computer service supplier personnel.
- Analysis and recording of data collected.
- Verification of recorded data.
- Quantification of management interviews.
- Projections of long term requirements.

2.2 BASELINE WORKLOAD

During Phase I, Informatics identified approximately 190 computer systems and ADP activities from the FY77 Zero Base Budget (ZBB) submission. The activities selected represented approximately 80% of the total timesharing funds projected for use in 1978 by the ZBB. Represented were about 100 major activities at headquarters and the field and approximately 90 regional ADP activities. The Informatics team met with system managers and ADP coordinators to collect all available information, using the ADP activity survey form presented in the Phase I final report. Data collected from the computer service centers were then added to the individual surveys, using the account codes identified as the method of determining computer workload. This additional workload data augmented the data collected in the surveys for major systems and resulted in the capture of all timesharing workload for the Agency. Each ADP survey was returned to the ADP activity manager or ADP coordinator for verification. These data were then used to develop the current year baseline workload.

2.3 PROJECTED FUTURE WORKLOAD

The management level interviews with assistant administrators, deputy assistant administrators, office directors, regional administrators and laboratory directors, were documented and returned to the interviewer for verification. The final version of the interview forms, shown in the Phase I final report as management survey and director survey, was converted to quantitative values. Utilizing a combination of questions asked, values were developed for each of three scenarios, which are:

- Scenario I - comparable to today's activity at EPA and in the country, with a continuation of current economic levels, energy programs, and support for environmental programs.
- Scenario II - increased awareness of environmental problems caused by some environmental disasters. Pressure on the Federal government to do more in the environmental area and increased EPA budgets.
- Scenario III - serious economic problems and/ or shortage of some critical resources which would effect our life style, such as energy, food and water, on a national basis. Pressure to produce the needed resources with secondary concern for the environment.

The management responses were consolidated to obtain quantification of the information in the areas of:

- Future growth of EPA as a total entity based on economic growth and future national priorities. These judgments were stated in terms of potential budget changes.

- Changes in organizational program and mission responsibility based on changing priorities of the organization. These judgments were stated in terms of increased or decreased activity in the program and missions.
- Changes in the use of ADP to support the organizational programs and missions. These judgments were stated in terms of the relationship of ADP expenditures to the total program budget.
- Changes in the types of applications to be performed by the organization. Considered increases or decreases in data collection, data management, data analysis and modeling, reporting and tracking and program support.

The quantification of these judgments are presented on the "Projections of EPA Future" form by organizational entity and included in Volume III, Appendix to Consolidated Systems Study. Not all managers scheduled for interview were available and not all ORD laboratories were visited. Where interviews were not conducted no input was available for quantification, thus, in calculating future requirements the net impact (weighted summary) of the next larger organizational entity was used for long term projections.

A formula was developed to apply the management judgments to the existing ADP activity. To the best of our knowledge, no prediction formula was published which was applicable to this project. This formula was derived by Informatics expressly for EPA to predict its ADP workload. Individual factors for organization usage of ADP, program/mission changes and overall EPA growth, were applied to the 1977 baseline workload to estimate the workload for 1981, 1985 and 1990. Projections of workload changes for 1979 were provided by the ADP activity managers. When estimates were not made by the ADP activity managers, the formula was also used to project 1979 workload. For developmental activities, a 1979 baseline was established by using workload figures from an existing activity with similar characteristics.

Estimates for 1981 through 1990 were then calculated manually using the projection formula. In some specific cases, special judgment was used to determine future ADP activity. This included the projections for toxic substances and solid waste. These programs are to generate extremely high growth in the near and long-term future and have very little in terms of a current baseline workload upon which a formula can be applied. This is primarily due to the relative newness of supporting legislation and supporting programs.

A long-term projection was made for each existing ADP activity which considered its projected life and the application it was performing. One of the major assumptions made as a result of discussions with all levels of management was that many existing ADP activities will end during the 13 year time period and be replaced by similar types of applications. These new activities should be more effective and efficient as a result of the learning process from the current activities. An example of this learning process is demonstrated with the STATE system which will replace RAPS in the Air Program. RAPS had an extremely heavy data collection effort and data analysis was not performed to any great extent until now. The STATE system, which will perform a similar function, will have more data analysis and modeling activities early in the program to control the amount of data collected and to interpret these data during collection.

SECTION 3

CURRENT ADP WORKLOAD

3.1 INTRODUCTION AND SCOPE

This section presents the current year (1977) computer workload for existing ADP activities by AA and DAA organizational units. Missions and programs are defined for each DAA and are summarized by AA office in order to present the basis for ADP activities. Each major ADP activity is described and related to the organizational program it supports. Graphs are included for each AA and DAA office showing computer workload for WCC (COMNET) and NCC computer centers. In addition to the six AA offices, workload and mission discussions are presented for staff offices, regional offices, and for EPA as a total entity.

3.2 WORKLOAD FACTOR DEFINITIONS

Computer workload is presented in "resource hours" for WCC (OSI/COMNET) operations and in "SUP hours" for systems in operation at the NCC facility. These figures were based upon OSI and NCC utilization accounting systems for seven months of operating history at OSI and NCC, ending in April 1977. The figures were averaged to provide a typical monthly workload figure for each system. Although SUP and resource hours are not directly comparable, they come closest to encompassing the factors making up computer processing workload among those available. SUP hours is a Univac measurement factor including central processor (CAU) usage, input/output usage, and executive services. Resource hours are used at the IBM (OSI) facility and include central processor usage, input/output usage, and memory usage. Other areas of workload collected for each activity are presented in summary form for each DAA level office in the

Appendix (Volume III) and include data storage, input/output volumes, terminal connect time, and detailed processing statistics. Detailed workload at the ADP activity level is available in a special file provided to MIDSD.

3.3 CURRENT ADP SERVICE FACILITIES

The primary ADP service facilities for the agency are the Washington Computer Center (WCC), currently operated by COMNET in Washington, D.C. using an IBM 370/168, and the National Computer Center (NCC) at Research Triangle Park, N.C., using a Univac 1110 system. The WCC facility operation was transferred from Optimum Systems, Inc. (OSI), Rockville, Md. to COMNET at the end of June 1977. The Univac system at NCC was purchased by EPA and is staffed and operated by contractors under a facilities management arrangement. The WCC facility handles the majority of the ADP workload for Office of Program Management (OPM), Office of Enforcement (OE), Office of Water and Hazardous Materials (OWHM), Office of Toxic Substances (OTS), Regional Offices, and headquarters staff offices. The NCC facility is used most heavily by Office of Air and Waste Management (OAWM) and the Office of Research and Development (ORD). Current hardware configurations for WCC and NCC facilities are shown in Figures 3-1 and 3-2.

3.4 MISSION AND WORKLOAD ANALYSIS FOR CURRENT ADP UTILIZATION

The following subsections define missions and supporting programs for each AA and DAA office, regional offices, and staff offices. ADP activities supporting mission programs are described in the context of their supportive role. Overall EPA current workload is presented first with each AA office group following. Graphs are included showing current ADP workload by office and by ADP activity for WCC and NCC computer facilities.

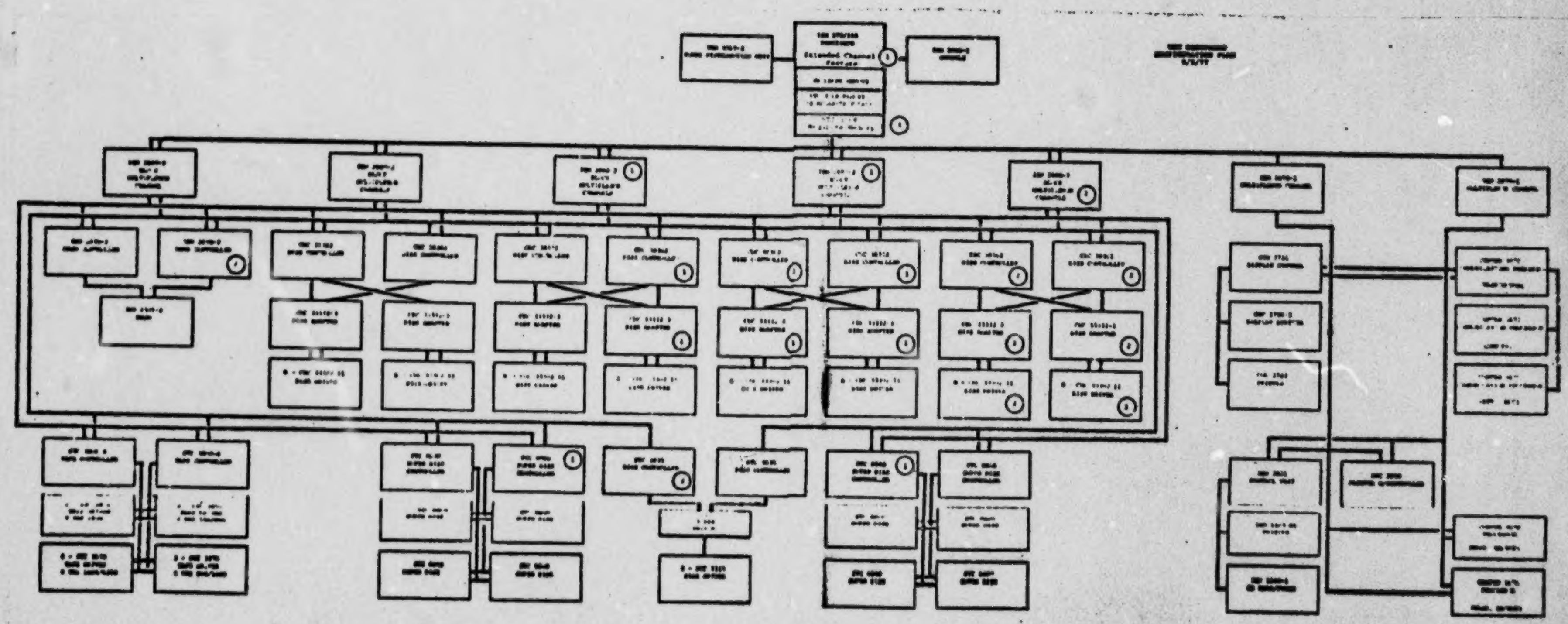

Extended Channel Feature

Figure 3-1. WCC Computer Configuration

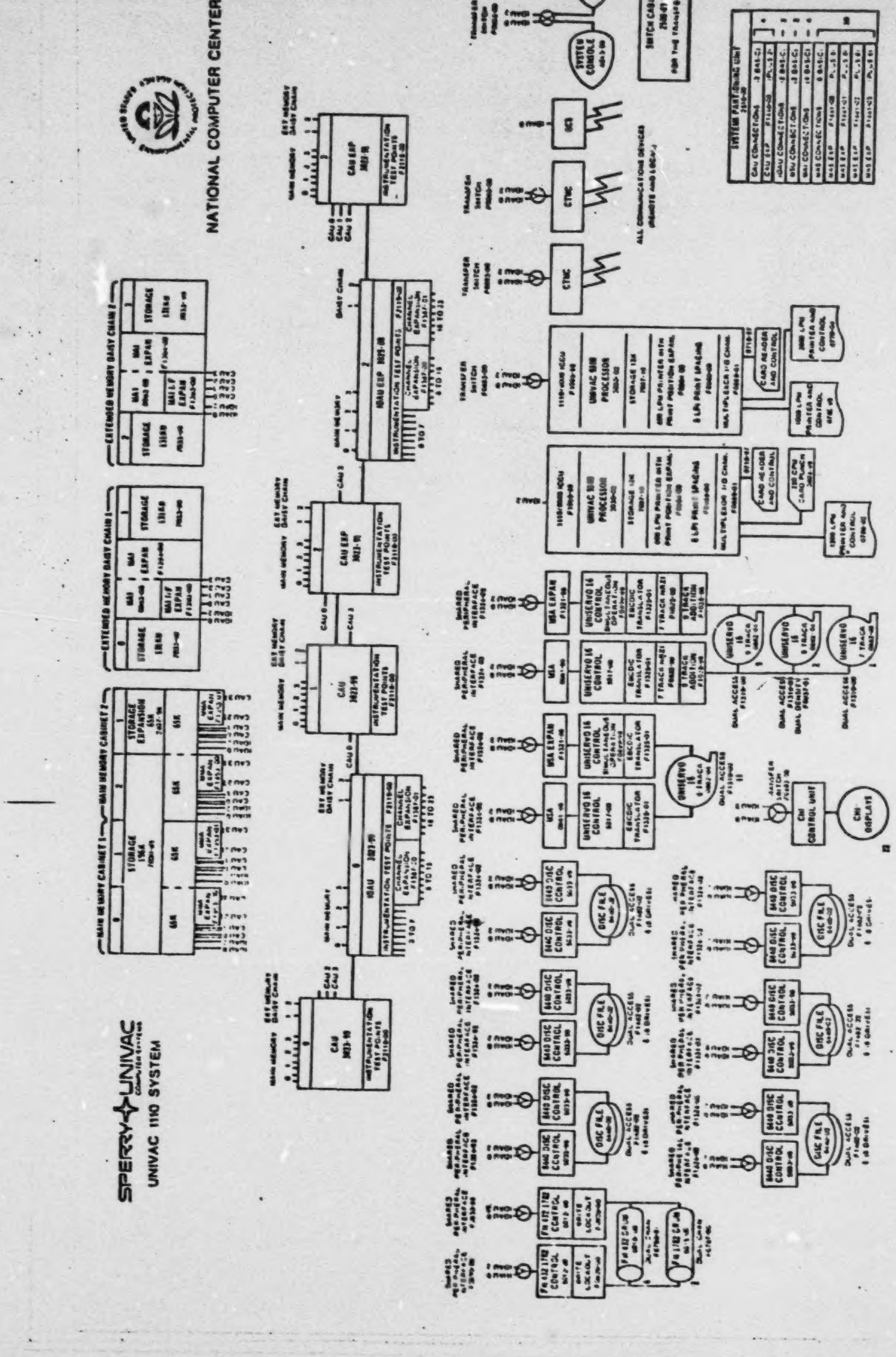

SPERRY UNIVAC
UNIVAC 1110 SYSTEM
NATIONAL COMPUTER CENTER
MAIN MEMORY CABINET 1
MAIN MEMORY CABINET 2
EXTENDED MEMORY DAISY CHAIN 1
EXTENDED MEMORY DAISY CHAIN 2
STORAGE
CAU
CAU EXP
IOAU
IOAU EXP
INSTRUMENTATION TEST POINTS
CHANNEL EXPANSION
UNIVAC 9300 PROCESSOR
CTMC
DISC FILE
8440 DISC CONTROL
UNISERVO 16 CONTROL
UNISERVO 16
FH 432 1782 CONTROL
CRT CONTROL UNIT
CRT DISPLAYS
SYSTEM CONSOLE
SWITCH CABINET
SYSTEM PARTITIONING UNIT
ALL COMMUNICATIONS DEVICES (REMOTE AND LOCAL)

Figure 3-2. NCC Computer Configuration

3.4.1 Total EPA

EPA was organized in 1970 under the President's Reorganization Plan No. 3 and consisted initially of five Assistant Administrator (AA) level offices corresponding to logical groupings of missions and programs set forth by legislation in effect at that time. Additional legislation since then has caused some changes in the organization, the most noteworthy being creation of a sixth AA level office for Toxic Substances in 1976. In addition to AA level offices, ten regional offices were established to decentralize the Agency and provide local assistance and control programs. Staff offices were organized to provide support to the Office of the Administrator.

Current ADP workload surveys focused on the six AA offices, regional offices, and staff offices in order to develop a baseline for measuring future projected workload. The following summarizes the current (1977) workload findings for each of these major areas. The chart in Figure 3-3 presents total WCC and NCC computer workload for each office.

- Office of Planning and Management (OPM): responsible for overall Agency administrative and management support activities. The Grants Information and Control System (GICS) is the largest ADP activity in this office. Other systems include general administrative, financial and resource management activities.
- Office of Enforcement (OE): monitors compliance to standards for environmental quality in programs for air, water, pesticides, radiation, noise, and solid waste. ADP activities primarily involve tracking of facilities and their compliance to standards and pollution regulations.
- Office of Water and Hazardous Materials (OWHM): develops standards and national policy for water and solid waste programs. Major ADP systems include STORET for national water quality monitoring,

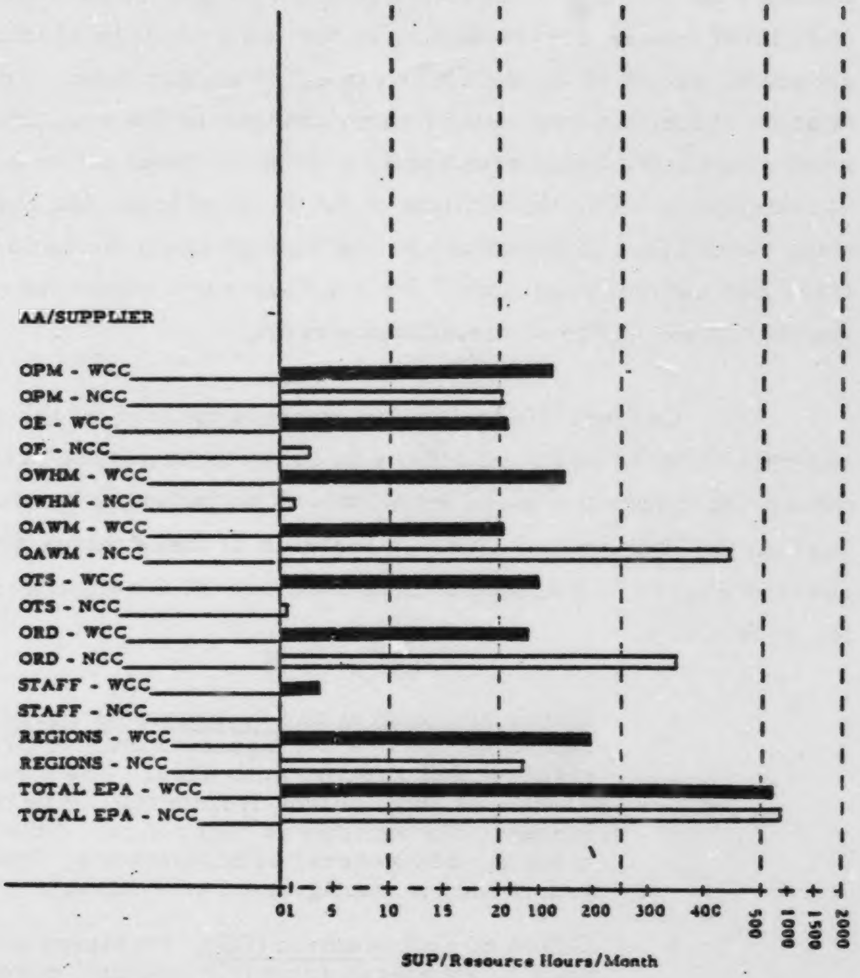


Figure 3-3. EPA Total Current Workload

construction grants and a series of water supply systems which will shortly be replaced by new systems responsive to the Safe Drinking Water Act of 1974.

- Office of Air and Waste Management (OAWM): administers programs for research, standards development, and local assistance in air, noise, and radiation activities. Heaviest ADP activities are in air quality monitoring systems such as Storage and Retrieval of Aerometric Data (SAROAD), National Emissions Data System (NEDS) and the Energy Data System (EDS).
- Office of Toxic Substances (OTS): develops policy and coordinates programs for testing, assessment, monitoring, regulations, and evaluation of chemical substances and pesticides. The prime ADP activities currently supporting OTS are the Mathematical Modeling and Statistical Analyses System for predicting and monitoring pollutant hazard levels, and the Pesticides Product Information System (PPIS).
- Office of Research and Development (ORD): operates over 40 laboratory facilities nationwide to develop technical bases for environmental standards, measurement and quality control standards, pollution control technology, and methodologies for evaluating environmental management options. A variety of modeling, analysis, testing, and tracking systems are used by ORD in their ADP activities.
- Staff Offices: a variety of offices support the EPA administrator in areas of judiciary, civil rights, federal activities, legal council, international activities, legislation, public affairs, and regional and intergovernmental offices. ADP activities monitor federal facilities and actions, and provide a public affairs mailing list.
- Regional Offices: provide direction at the regional level for all agency programs and exercise of approval authority for state standards and plans. Major ADP activities in the regions and associated states involve STORET for water quality monitoring, and air quality operations with SAROAD, NEDS and the Compliance Data System (CDS). Other national systems utilized by the regions include Spill Prevention Control and Countermeasure (SPCC), Establishment Registration Support System (ERSS), Personal Property System (PPS), Formal Reporting System (FRS), and Pesticides Enforcement Monitoring System (PEMS).

The following subsections provide a more detailed description of Agency missions, programs, and ADP activities for DAA level offices, regional offices, and laboratories within each major AA area.

3.4.2 Office of Planning and Management (OPM)

This office is responsible for the overall administrative and management activities of the Agency. Functions include the coordination of planning, evaluation, and standard setting efforts; direction of the Agency's resource processes; and the providing of administrative support. The following DAA level offices provide operating programs in support of these missions.

- Office of Administration (OA): responsible for a range of management functions such as contracting/procurement, data processing management, personnel policies and operations, and facilities management.
- Office of Planning and Evaluation (OPE): responsible for program evaluation activities including cost/benefit analysis, impact assessments and economic evaluations.
- Office of Resource Management (ORM): responsible for operation of resource management programs for the Agency including budget operations, grants methodology, program analysis, and financial management and services.

ADP activities supporting OPM missions are conducted at both WCC and NCC facilities (see Figure 3-4). The bulk of activity is performed at WCC but some activities such as the Timesharing Services Management System within OA are being shifted from WCC to NCC. Most activities are small with less than $200,000/year of current usage; the Grants Information and Control System being the only exception. The activities within OA and OPM are generally tracking and reporting systems, while the ADP used by OPE is in support of data analysis and modeling activities.

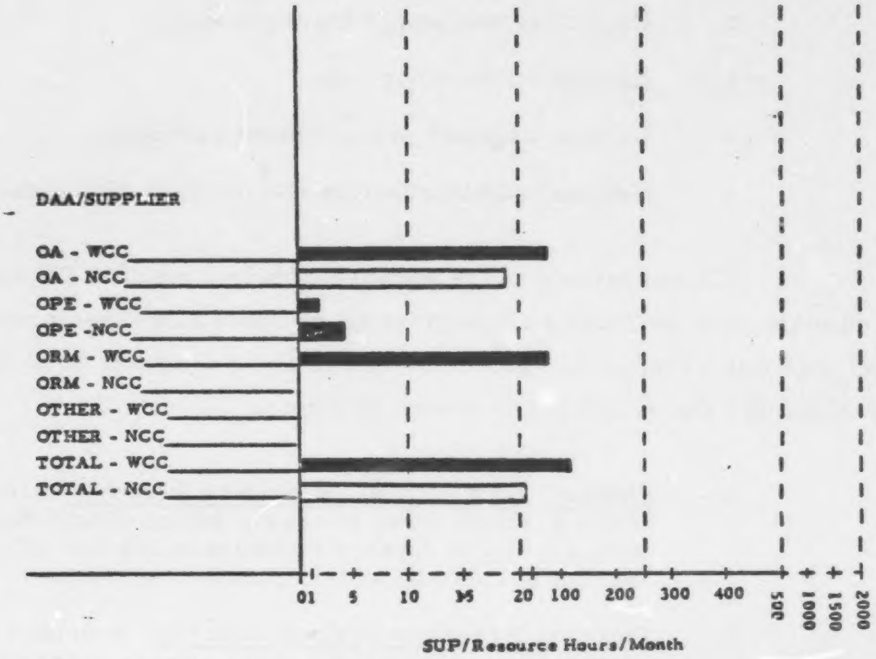


Figure 3-4. Office of Planning and Mgt. Current Workload

A. Office of Administration (OA)

This office is responsible for a range of management functions in support of the overall Agency mission. Specific functions include:

- Development and operation of programs for organization and management systems, controls, and services.
- Personnel policies, procedures, and operations.
- Personnel, physical, and document security and inspection.
- Management information systems development and coordination of Agency ADP applications.
- ADP operations on service bureaus and Agency computers.

- Facilities and space management.
- Agency safety programs.
- Contracting and procurement services.
- General administration and support services.

OA operates a large number of fairly small ADP activities in support of their mission. Almost all of these activities are associated with use of national systems. These are described below and the workload for the activities is shown in Figure 3-5.

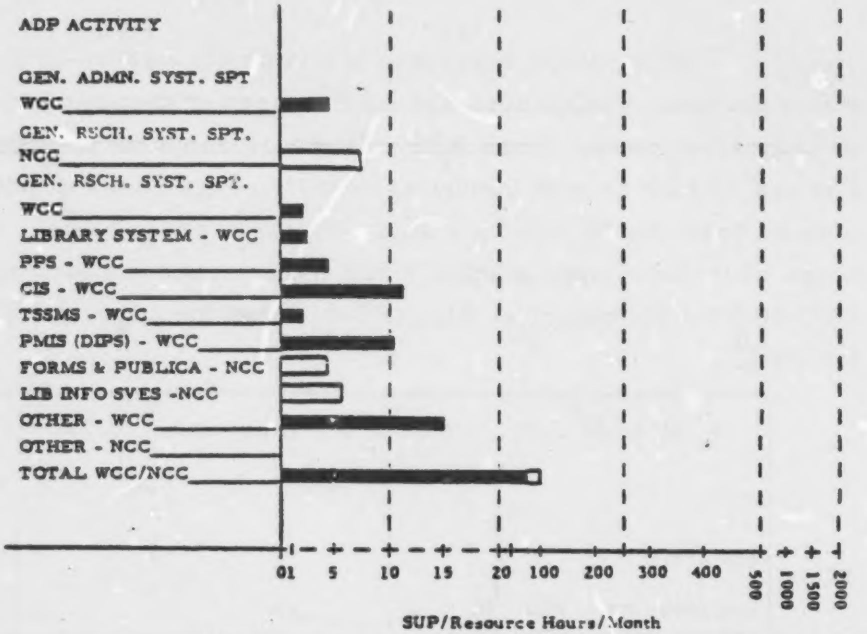
- General Administrative System Support: provides a single local access point in Cincinnati with access to Agency computers for the utilization of national administrative system.
- General Research System Support: provides a single EPA - Cincinnati local access point to Agency computers for technical development activities of general benefit such as graphics, statistical analysis and laboratory automation.
- Library System: provides a range of data processing capabilities applied to book cataloging, journal holdings, circulation, referral and document control.
- Personal Property System (PPS): provides inventory control and accountability for property under the control of EPA as required by the Federal Property and Administrative Services Act.
- Contracts Information System (CIS): provides identification of all pending procurement actions and their status, plus all relevant contract information from award to completion.
- Time-Sharing Services Management System (TSSMS): provides a cost accounting system that tracks computer charges against user accounts and generates reports for the user community and ADP managers.

- Personnel Management Information System (PMIS/DIPS): provides personnel data and capabilities to analyze and report on this data in support of management activities and related operations such as training and EEO reporting.

- Library and Information Services: provides support for indexing, cataloging and tracking of EPA library holdings at RTP.

- Forms and Publications: provides use to maintain and update forms, publications and name/address files and provides access lists and labels in support of RTP operations.

Figure 3-5. Office of Administration



Activities shown as "Other" in the chart include the Real Property System, Telephone Directory, and the EPA Security System.

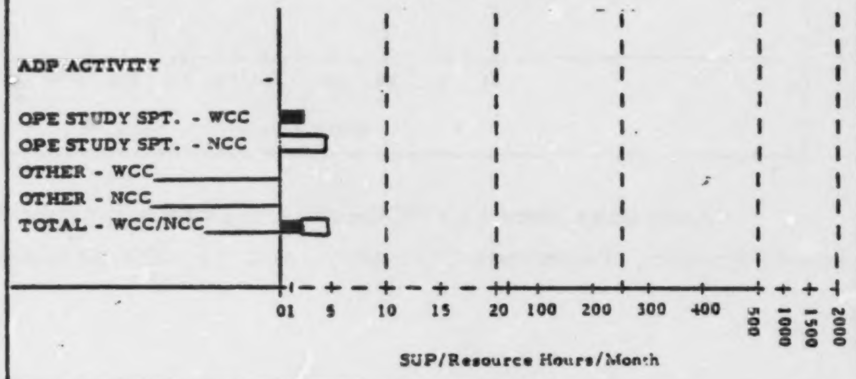
B. Office of Planning and Evaluation (OPE)

This office is responsible for program evaluation activities conducted within the Agency. Specific functions performed are:

- Evaluation and development of new approaches for Agency-wide program evaluation activities.
- Compiling selected statutory reports to Congress.
- Providing procedural management, planning, and evaluation of Agency standards, regulations, and guidelines.
- Conducting economic evaluation of Agency programs, policies, standards and regulations.

Much of the analytical effort performed by OPE is done with contractor assistance, and ADP is used to monitor and elaborate on contractor work. Some ADP usage also supports in-house studies. The use of ADP at both computer centers is not on a continuing systematic basis but rather on a study-by-study needs basis. Current usage consists of approximately 7.3 WCC resource hours and 13.8 NCC SUP hours monthly. Figure 3-6 shows the current ADP workload for OPE.

Figure 3-6. Office of Planning and Evaluation



C. Office of Resource Management (ORM)

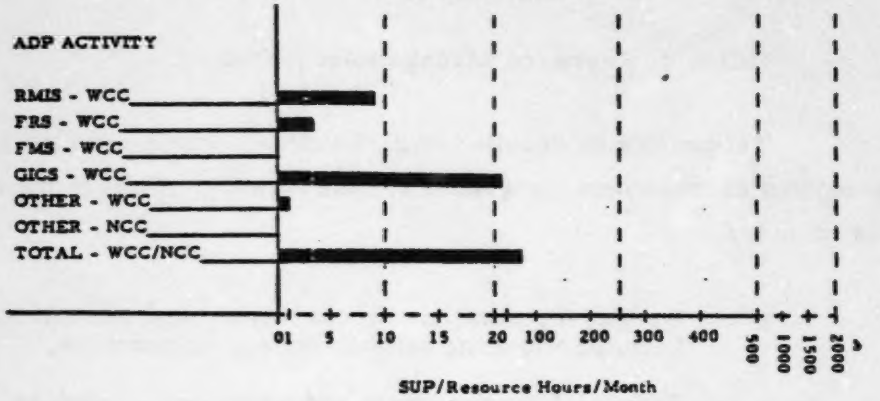
This office is charged with the development and operation of resources management programs for the Agency. Programs conducted include:

- Budget formulation, preparation, and execution, including funding allotments and allocations.
- Financial management and services, including developing and maintaining accounting systems, fiscal controls, and systems for payroll and disbursements.
- Program analysis and reporting.
- Grants policies and procedures development.

Figure 3-7 shows the workload for the spectrum of ADP activities run by this office. These activities are processed at the WCC and are described below.

- Resource Management Information System (RMIS): assists in the development of the Agency budget and operating plans and in the administrative control of funds.
- Formal Reporting System (FRS): a system designed to provide a framework within which data pertinent to major EPA and State plans/programs are consolidated into a unified reporting scheme and made available to Agency management.
- Grants Information and Control System (GICS): provides a comprehensive data base and reporting capability used to track the status of more than thirty thousand actual or proposed grants.

Figure 3-7. Office of Resource Management Current Workload



The "Other" component on the chart includes the Reports Management Program and miscellaneous financial management processing. In addition, ORM currently utilizes the HEW Parklawn Computer Center for operation of the Financial Management System (FMS). This system currently has timesharing expenditures of over $300,000 annually and serves as the sole official source of recorded financial transaction data in EPA for headquarters, regional office, and field office use. The FMS activity is planned for transfer to the WCC by 1979.

3.4.3 Office of Enforcement (OE)

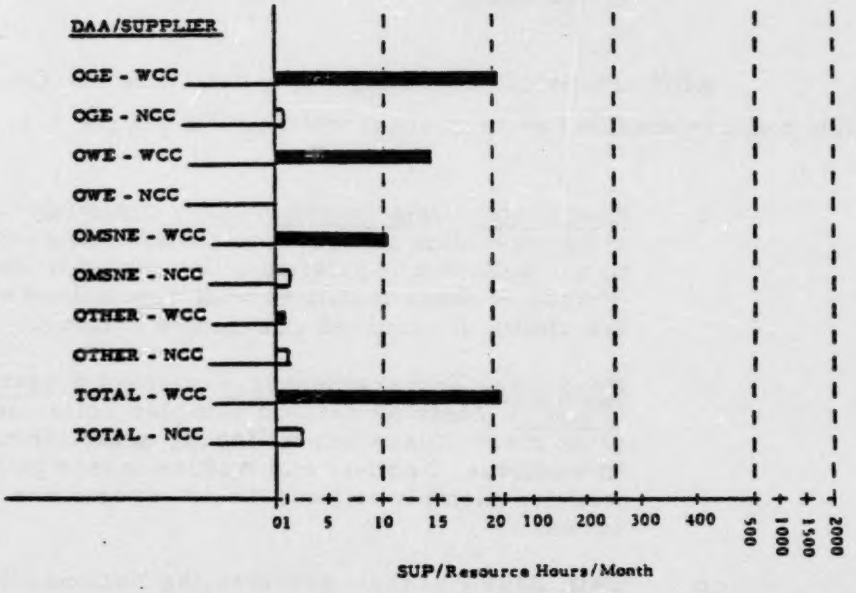
This office serves as the principal advisor to the administrator in matters pertaining to the enforcement of standards for environmental quality and is responsible for the conduct of enforcement activities on an agency-wide basis. There are three DAA level offices, each of which has responsibility for enforcement operations associated with specific programs.

- o Office of General Enforcement: responsible for enforcement activities associated with stationary source air, pesticides, radiation and solid waste programs; responsibilities will also include toxics enforcement.

- **Office of Water Enforcement:** responsible for enforcement related to water and water supply programs.
- **Office of Mobile Source/Noise Enforcement:** responsible for enforcement activities associated with the mobile source air program and noise program.

ADP activities supporting OE missions are concentrated at the WCC facility. The activities implemented consist of a range of small (all less than $100,000) systems. Virtually all activities perform a tracking function and process data bases containing information on facilities and their compliance with existing pollution regulations. The status of required corrective actions is also monitored using ADP. The use of ADP time-sharing by each DAA is summarized in Figure 3-8.

Figure 3-8. Office of Enforcement
Current Workload



A. Office of General Enforcement (OGE)

This office is responsible for enforcement activities associated with stationary source air, pesticides, radiation and solid waste programs with new activities forthcoming in toxics enforcement. Legislation supported includes the Clean Air Act, Resource Conservation and Recovery Act, Federal Insecticide, Fungicide, and Rodenticide Act, and the recent Toxic Substances Control Act. Functions include:

- Providing program policy direction to enforcement activities in the areas listed above.
- Developing and issuing Agency policies, guidelines and regulations (for applicable programs) pertaining to citizen suits and the exercise of the Agency's authority to perform inspections and levy requirements for record keeping, reporting, sampling and monitoring.
- Reviewing scientific analyses of pesticide samples and pesticide registration decisions to determine enforcement action needed to achieve compliance.

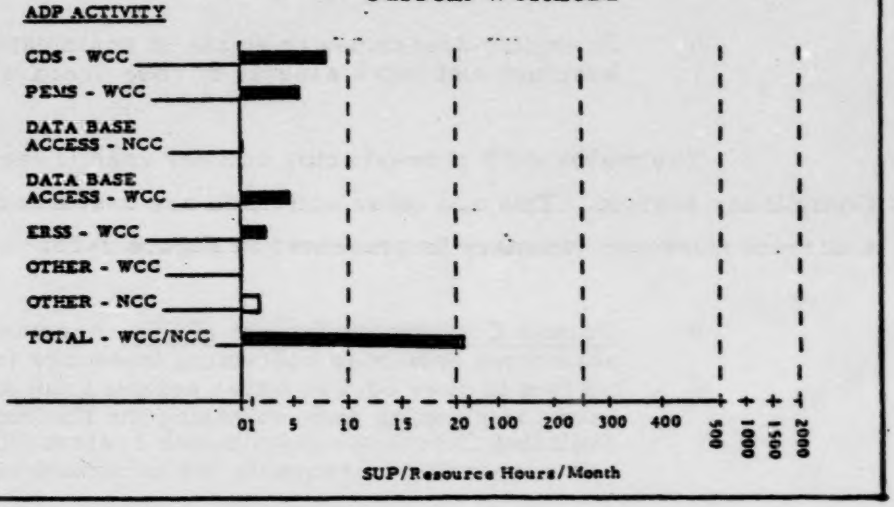
ADP activities supporting these missions are described below and summarized as to current workload in Figure 3-9.

- Compliance Data System (CDS): tracking capability providing information on facilities subject to air pollution regulations, the status of compliance of these facilities with regulations and the status of required corrective actions.
- Pesticides Enforcement Management System (PEMS): contains data on samples collected from marketplace surveillance, establishment inspections, imports and misuse investigations; weekly, monthly and quarterly reports are produced.
- Data Base Access: provides the National Enforcement Investigation Center (NEIC) with the ability to access national data bases maintained

at the WCC/NCC; and to develop and use application programs to perform specialized data analysis operations.

- **Establishment Registration Support System (ERSS)**: supports the pesticides registration process by maintaining a nationwide file identifying all pesticide-producing establishments, the products produced at each establishment, and production/distribution histories and estimates.

Figure 3-9. Office of General Enforcement Current Workload



Additional OGE activities shown as "Other" in the chart include the use of RTP Air Systems and the Property Management system at the National Enforcement Investigation Center (NEIC) in Denver.

B. Office of Water Enforcement (OWE)

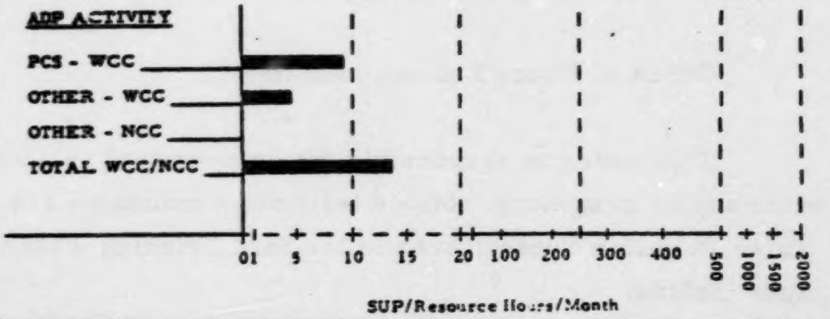
This office is responsible for enforcement related to water and water supply programs. Major legislative mandates are the Federal Water Pollution Control Act and the Safe Drinking Water Act. Functions include:

- Providing program policy direction to the water and water supply enforcement activities of the Agency, including direct supervision of regional water enforcement activities.
- Developing Agency-wide objectives and programs for water enforcement activities including promulgation of procedures, regulatory material, guidelines, criteria, and policy statements.
- Providing technical direction for the Agency's activities in the implementation of the National Pollutant Discharge Elimination System and related programs, and directing the review of discharge permit applications.
- Providing assistance to states in adjudicatory hearings and legal aspects of case preparation.

The major ADP time-sharing activity used is the Permit Compliance System. This and other activities are described below and a current workload summary is presented in Figure 3-10.

- Permit Compliance System (PCS): provides an automated data base containing inventory information of over 60,000 water permit applications; used for planning and evaluating the National Pollution Discharge Elimination System (NPDES) and responding to requests for information.

Figure 3-10. Office of Water Enforcement Current Workload



The "Other" category shown on the chart includes the Adjudicatory Hearing System (ADHS) and other data processing in support of national program management.

C. Office of Mobile Source/Noise Enforcement (OMSNE)

This office is organized under the legislative mandates of the Clean Air Act and Noise Control Act to conduct enforcement activities associated with the mobile source air and noise programs. Functions performed include:

- Providing program policy direction to mobile source air and noise enforcement activities.
- Developing and issuing Agency policies, guidelines, and regulations pertaining to mobile source air and noise enforcement.
- Designing enforcement programs involving test and surveillance of vehicles to accomplish enforcement of motor vehicle emission standards.

The range of ADP activities supporting mobile source enforcement and the single noise enforcement systems are described below. Figure 3-11 summarizes current workload for these activities.

- Emissions Data Base: provides a data base for retention and retrieval of emissions data on approximately 3/4 million vehicles, and the capability to analyze the data using a range of statistical techniques.
- Fuels Data Base System: a range of capabilities including data storage, analysis and tracking related to violations of non-leaded fuel requirements by gasoline stations and/or suppliers.
- Imports Data Base: provides a data base of information on all automobiles passing through U.S. Customs and a capability to search this data and identify all vehicles not in compliance with the provisions of the Clean Air Act.

- Noise Enforcement Data Based Analysis: supports retention of data used to identify, analyze and track violators of noise regulations and the capability to analyze noise pollution data using mathematical/ statistical technology.

Other activities utilized by the office include the Vapor Recovery Data System.

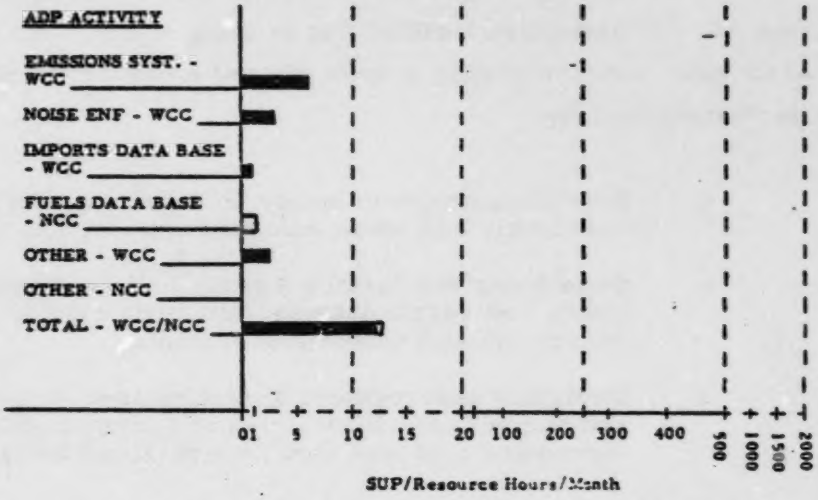


Figure 3-11. Office of Mobile Sources and Noise Enforcement Current Workload

3.4.4 Office of Water and Hazardous Materials (OWHM)

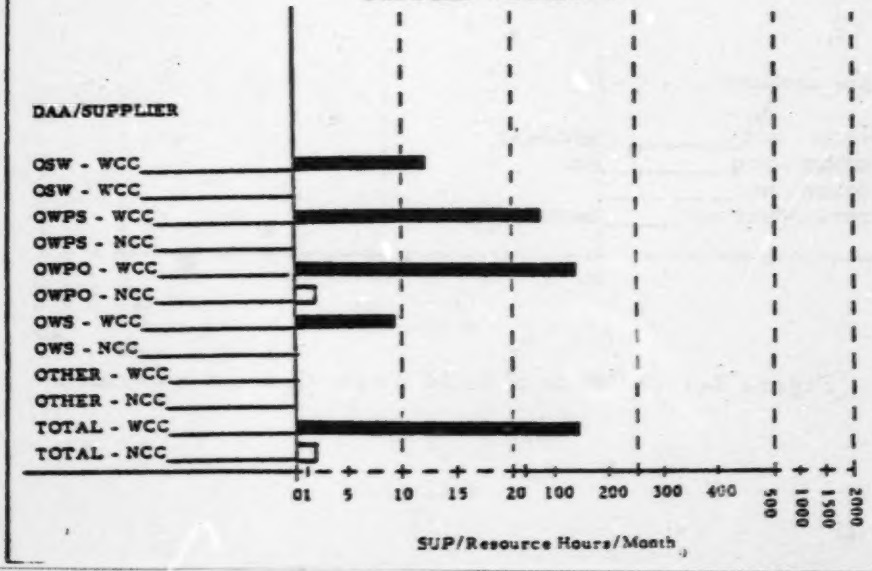
This office is responsible for the agency's solid waste and water programs. Responsibilities include the development of standards, criteria and national policy related to solid waste and water. The following DAA level offices provide operating programs in support of these missions:

- Office of Solid Waste Management (OSWM): develops guidelines, provides technology information services, and assists local programs in solid waste management under mandate of the Solid Waste Dispoal Act and the Resource Conservation and Recovery Act.

- **Office of Water Planning and Standards (OWPS):** develops standards, criteria and national policy needed to restore the integrity of the Nation's waters as set forth in the Federal Water Pollution Control Act.
- **Office of Water Program Operations (OWPO):** implements and manages the water quality construction grants program and the spills prevention and control activities. The Federal Water Pollution Control Act is also the mandate for this office.
- **Office of Water Supply (OWS):** develops overall technical policy, procedures and guidelines for water supply programs, and oversees and supports state activities in meeting the requirements of the Safe Drinking Water Act.

Virtually all time-sharing usage by OWHM is at the WCC. A range of data bases are maintained and used for analysis, tracking and reporting. Major current systems include the Solid Waste Information Retrieval System (SWIRS) within OSWM; STORET and related activities in OWPS; and NEEDS and Construction Grants within OWPO. Current systems within OWS are being subsumed by a comprehensive set of ADP activities currently being developed. Figure 3-12 summarizes current workload by DAA.

Figure 3-12. Office of Water and Hazardous Materials. Current Workload



A. Office of Solid Waste Management (OSWM)

The Office of Solid Waste Management is responsible for development of guidelines and technology information services under the mandate of the Solid Waste Disposal Act and the Resource Conservation and Recovery Act. Functions performed in carrying out this mission include the following:

- Development and monitoring of demonstration projects for volume reduction and disposal of solid waste and hazardous materials.
- Assistance to public and private agencies at the local level by financial assistance, training programs, and long range planning advice.
- Technical information services on research findings and advanced practices in solid waste management technology.

ADP systems providing support to these programs include data management and modeling activities and the Solid Waste Information Retrieval System (SWIRS). SWIRS provides a data base of current technical literature and is utilized by public and private organizations through retrieval and current awareness journals. All ADP workload is processed by COMNET and the WCC system. Figure 3-13 shows the 1977 workload for these activities.

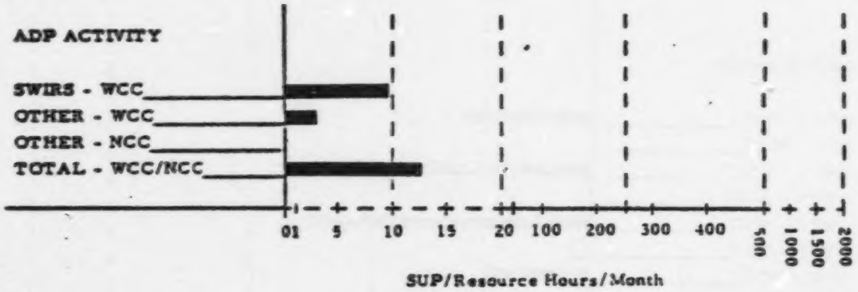


Figure 3-13. Office of Solid Waste Current Workload

B. Office of Water Planning and Standards (OWPS)

This office is responsible for developing guidelines, standards, criteria and national policy needed to restore the integrity of the Nation's waters, and to monitor the efficacy of water clean-up efforts. PL92-500, the Federal Water Pollution Control Act provides the legislative mandate for the programs of this office. The following functions are performed by divisions within this office.

- Effluent Guidelines Division: develops guidelines for industrial waste water discharge for incorporation in industrial permits.
- Monitoring and Data Support Division (MDSD): monitors water quality nationwide and maintains a data system in support of water clean-up efforts.
- Water Planning Division: assists the States and regional agencies in establishing water quality standards and in planning local water resources management. Develops policies related to State program grants. Develops and coordinates overall water pollution control strategy for the Agency. Develops non-point source institutional controls and guidelines.

MDSD is responsible for the development, operation, and maintenance of the STORET system which is a nationally used water quality data base and data processing facility. Workload for the OWPS utilization of STORET and other activities is shown in Figure 3-14 and described below. STORET use by other EPA components/States is reflected in figures for those components.

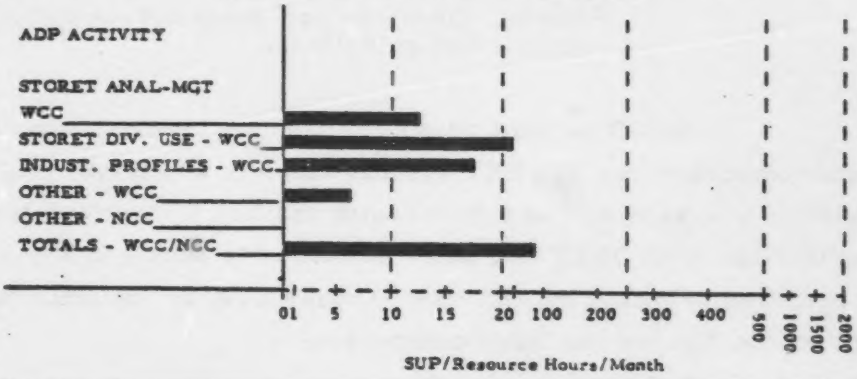
- STORET Analysis/Management: provides for the development and utilization of techniques for analyzing data stored in the STORET data base (STORET Analysis) and the determination of STORET usage (STORET Management).

- **STORET Division Use:** provides for the development, operation and maintenance of the STORET system; a utility which makes water quality data and data handling available to States and EPA Regions to meet their statutory planning, regulatory and reporting requirements.
- **Industry Profiles:** serves to locate and describe toxics related industries and trends.

Other ADP usage by OWPS includes additional water quality analysis and planning functions such as Section 208 (Federal Water Pollution Control Act) area planning and economic impact studies.

OWPS is also the major EPA user of word processing capabilities (Bowne Time-Sharing) in support of publication of effluent guidelines and other reports.

Figure 3-14. Office of Water Planning and Standards - Current Workload



C. Office of Water Program Operations (OWPO)

This office is responsible for the implementation and management of the water quality construction grants program; a program with a budget of roughly five billion dollars. Activities related to spills prevention and control also are conducted by this office. The legislative requirement for OWPO is PL 92-500, the Federal Water Pollution Control Act. The three divisions within this office are:

- Municipal Construction Division: provides national direction and coordination to assistance programs (including grants) for the design, construction, operation, and maintenance of municipal waste water treatment systems.
- Oil and Special Materials Controls Division: Implements plans and programs for the prevention, and when necessary, the clean-up of water pollution from spills of oil and other hazardous materials, and ocean pollution... coordinates in the review of environmental impact statements.
- Municipal Permits and Operations Division: develops programs to utilize waste water treatment construction grants and permit activities to improve operational efficiency of municipal waste water treatment facilities. Develops Federal training programs for skilled water pollution personnel.

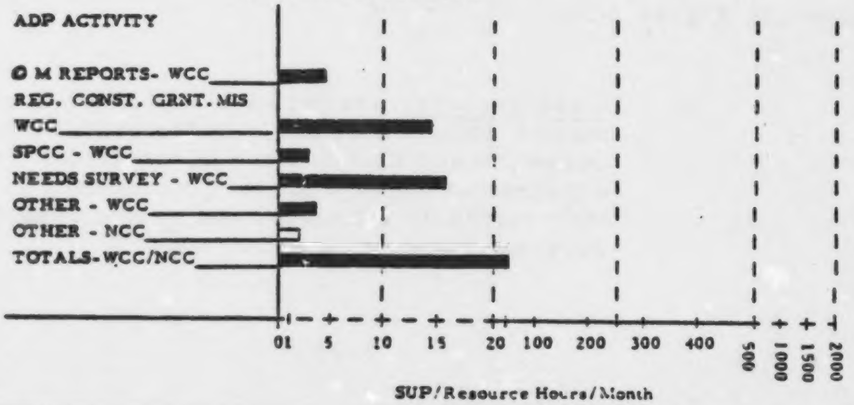
OWPO operates several data systems mainly at the WCC facility. These are described below and their current workload is shown in Figure 3-15.

- O&M Reports: serves as a repository for information collected annually on the efficiency of operation and maintenance of treatment works constructed under Federal grants; used to provide regularly scheduled and ad hoc reports for program management and support.

- **Regional Construction Grants:** provides a system for the management and administrative control of the wastewater treatment construction grants program; outputs include recurring management reports, responses to ad hoc requests and forecasts of fiscal outlays.
- **Spill Prevention, Control and Countermeasure (SPCC) System:** used to monitor and report on compliance deadlines and actions to be taken for the prevention of spills from oil storage facilities and to track spills which have occurred.
- **Survey of Needs for Municipal Wastewater Treatment Facilities (NEEDS):** provides a repository and reporting capability covering technical and cost data for publically owned treatment works; produces cost estimates used as a basis for allocating construction grant funds.

Other systems operated on EPA facilities by OWPO includes the Construction Cost Estimating program, an effort to estimate the capital and operation and maintenance costs of waste water treatment works and related activities in conjunction with the Corps of Engineers. The Oil and Special Materials Controls Division uses the Bowne Time-Sharing System in the development of regulations for ocean dumping and also maintains a separate account with COMNET/Informatics for ADP services to run the Office of Hazardous Materials Technical Assistance Data System (OHMTADS) system (provides technical data for use by field personnel in responding to hazardous substance spills).

Figure 3-15. Office of Water Program Operations Current Workload



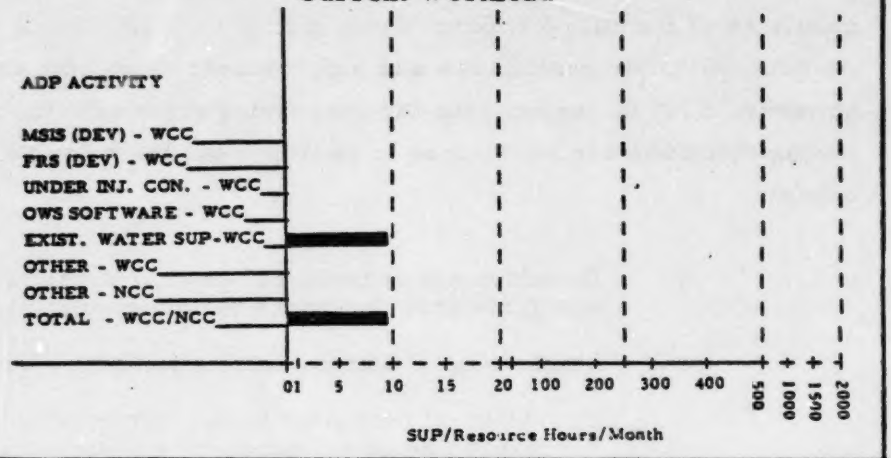
D. Office of Water Supply (OWS)

The Office of Water Supply is responsible for implementing provision of the Safe Drinking Water Act of 1974 (PL 93-523). Primary responsibility for compliance and enforcement rests with the States; however, EPA is responsible for overseeing State activities. The following functions are performed in carrying out the mission of this office:

- Development of technical policy, procedures and guidelines for water supply programs.
- Monitoring of States compliance with regulations.
- Provision of computer based information systems for States use in accomplishing their tasks.
- Production of annual reports to Congress on compliance, variances, exemptions and enforcement.

The existing ADP activity within OWS consists of a series of systems which are all being phased out for replacement by newly developed software. The current systems, namely the Public Water Systems Inventory, Interstate Carrier, Primary Data and Drinking Water Contaminants, and Contact Files are being integrated into the Model State Information System (MSIS) which is currently being developed. The 1977 workload for OWS is all grouped under the heading "Existing Water Supply", with a current computer workload of 9.7 resource hours. Details of the OWS developmental activities are covered in Section 4.4.4(D) of this report. Figure 3-16 shows the current ADP workload for OWS.

Figure 3-16. Office of Water Supply
Current Workload



3.4.5 Office of Air and Waste Management (OAWM)

This office is responsible for administration and operation of research, standards development, evaluation assistance, and demonstration projects for agency programs in air, noise and radiation. The following DAA level offices provide operating programs in support of these missions:

- Office of Air Quality Planning and Standards: develops national air standards and monitors air quality under mandate of the Clean Air Act.
- Office of Mobile Source Air Pollution Control: develops national emission standards for mobile power systems and monitors compliance to these standards under provisions of the Clean Air Act.
- Office of Noise Abatement and Control: develops noise emission standards and coordinates noise control research among Federal agencies under provisions of the Noise Control Act and the Noise Pollution and Abatement Act.

- Office of Radiation Programs: sets policies and standards for radiation levels and assists in the development of local radiation control programs under mandates of the Public Health Services Act and the Atomic Energy Act.

ADP activities supporting OAWM missions are heaviest in the Office of Air Quality Planning and Standards (OAQPS) (see Figure 3-17) and include air quality monitoring systems such as SAROAD (Storage and Retrieval of Aerometric Data); NEDS (National Emissions Data System); Trends Reports; and EDS (Energy Data System). Additional systems for data collection, analysis, modeling, and technical literature retrieval support other DAA program areas such as noise, mobile source air pollution and radiation. The Univac system at NCC provides the primary source of ADP services for OAQPS and accounts for the largest share of OAWM services.

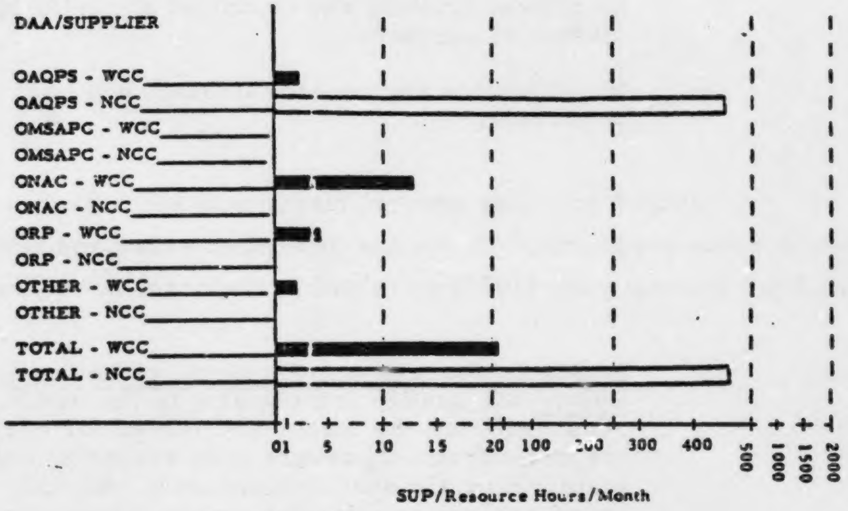


Figure 3-17. Office of Air and Waste Mgt. Current Workload

A. Office of Air Quality Planning and Standards (OAQPS)

This office has the responsibility for development of national air standards and programs and monitoring of air quality under the mandate of the Clean Air Act. The following functions are performed in carrying out these missions:

- Development of technical policy, procedures and guidelines for air control programs.
- Development of national emission standards for hazardous pollutants and national performance standards for new sources.
- Provide technical direction and support of regional and state implementation plans.
- Analysis and evaluation of air quality and emission data for monitoring of trends on standards attainment.
- Provide assistance to states and industry through manpower training and technical air pollution information services.
- Identification and control strategy analysis of pollutants.

OAQPS operates several major data systems in support of these mission programs. These are described below and are represented for current year (1977) workload in the chart in Figure 3-18.

- SAROAD (Storage and Retrieval of Aerometric Data): air quality sample data in the nation is received from the states and stored for analysis in determining progress in achieving and maintaining air quality standards. Annual trend reports and special studies are supported by the SAROAD data base.
- NEDS (National Emissions Data System): a national data base on emissions from major sources of air pollution, used for evaluation

of proposed emission standards and control strategies. A national emissions inventory report is prepared from these data.

- Trends Report: enables determination of regional and national ambient air quality trends and significance of trends in terms of national control policies.
- EDS (Energy Data System): provides a national overview of the impact on the air environment of the National Energy Program and an assessment of regional variations in emissions.

AEROS is an umbrella name for both NEDS and SAROAD and several smaller systems. Those ADP charges to AEROS accounts which were in direct support of NEDS or SAROAD were included within these activities. The remaining AEROS workload was included in the "Other" category. Other systems providing support to OAQPS include Comprehensive Data Handling System (CDHS); Assessment of Source/Receptor Relationships; and Air Management and Analytical Support. These systems are shown in the chart in Figure 3-18 in the "Other" category.

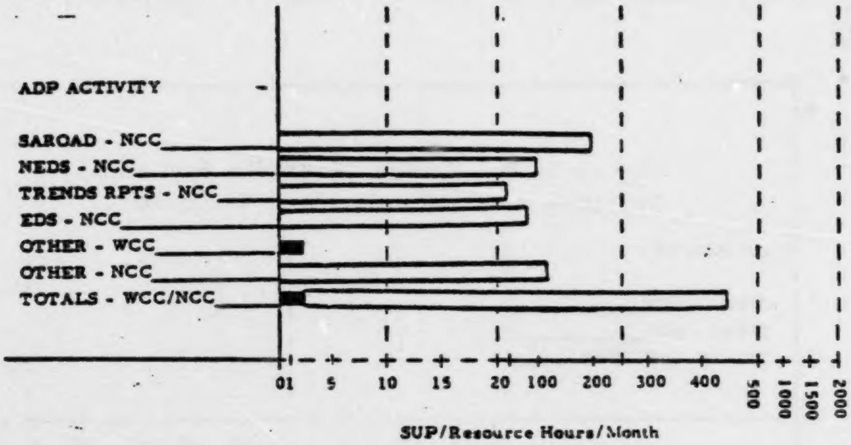


Figure 3-18. Office of Air Quality Planning and Standards Current Workload

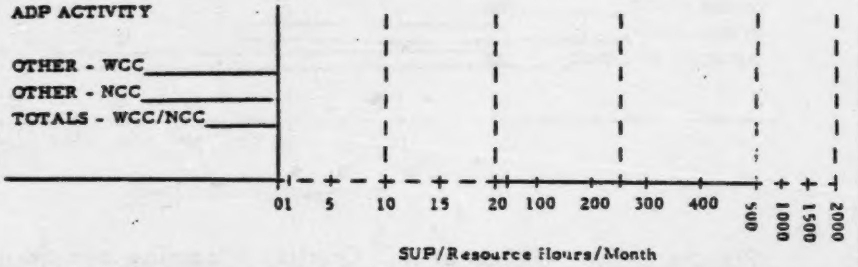
B. Office of Mobile Source Air Pollution Control (OMSAPC)

This office is responsible for development of national emission standards for mobile (vehicular) power systems and the monitoring of compliance to these standards under the Clean Air Act. The following programs are carried out in performing these missions:

- Development of profiles and characteristics on mobile source emissions that are being considered for future control.
- Evaluation of certification applications for motor vehicles and engines.
- Assembly line testing and surveillance activities.
- Development of emission standards and test procedures for mobile sources.

ADP systems supporting these mission programs include processing of emissions test data, modeling and analysis, and general data processing applications for property management and personnel. The Michigan Time-Sharing Service (MTS) at the University of Michigan is utilized for the majority of the ADP workload. The chart in Figure 3-19 shows the 1977 ADP workload for this office.

Figure 3-19. Office of Mobile Source Air Pollution Control - Current Workload



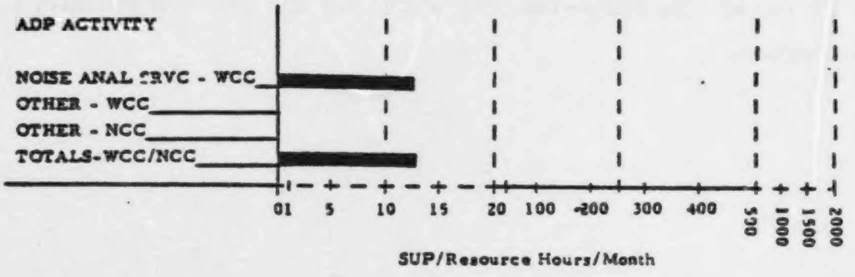
C. Office of Noise Abatement and Control (ONAC)

ONAC has responsibilitiy for development of noise emission standards and coordination of noise control research programs among Federal agencies under the Noise Control Act of 1972 and the Noise Pollution and Abatement Act of 1970. Programs performed in carrying out these missions include the following:

- Development of noise standards for commercial products, motor vehicles and aircraft.
- Coordination of noise research and development activities among DOD, NASA, HEW, and DOT.
- Information dissemination services on noise effects and techniques for measurement and control.
- Technical assistance to state and local government for development of noise control programs.

ADP functions operated in support of these mission programs include noise data acquisition; model development and processing; reporting; and monitoring. The Analytical Support Services and Information System operated by ONAC are the primary systems serving these functions. The chart in Figure 3-20 shows the 1977 ADP workload for these activities.

Figure 3-20. Office of Noise Abatement and Control - Current Workload



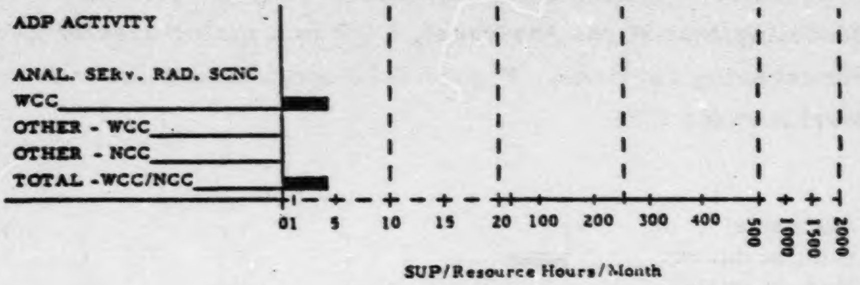
D. Office of Radiation Programs (ORP)

This office has responsibility for setting policies and standards for radiation levels in the environment and for assisting in the local development of radiation control programs. The Public Health Service Act and the 1954 Atomic Energy Act are the major items of relevant legislation for this office. Primary functions involved in carrying out these programs include the following:

- Evaluation of major Federal actions involving radiation.
- Development of policies, criteria, and standards for protection of the environment and the public from hazardous radiation.
- Technical assistance and information services to state and local government for development of radiation control programs.
- Establishment of surveillance and monitoring to determine levels of radiation. Review of environmental impact statements of major significance to ensure adherence to policies and legislation.

ADP systems supporting these programs consist of analytical services for statistical reporting, trend monitoring, and modeling of radiation data in support of standards, criteria, and guidelines development. Major data gathering workload is handled by a Digital Equipment PDP 11/45 minicomputer in Montgomery, Alabama. WCC and NCC systems process the analytical services workload. Figure 3-21 shows the time-sharing workload for 1977 in support of these activities.

Figure 3-21. Office of Radiation Programs Current Workload



3.4.6 Office of Toxic Substances (OTS)

This office is responsible for the Agency's toxic substances and pesticides programs. The organizational structure associated with the toxics substances operations is not yet clearly established. For purposes of this report a single DAA, The Office of Program Integration/Information (TOXICS) is shown as the organizational entity responsible for timesharing usage associated with toxics programs. Thus, the two DAA's shown are:

- Office of Program Integration/Information (TOXICS): responsible for information activities associated with developing policy and coordinating programs for chemical testing, hazard assessment, monitoring, regulations, and evaluation of chemicals under mandate of the Toxic Substances Control Act.
- Office of Pesticide Programs (OPP): develops standards, criteria and national policy relative to pesticides under the mandate of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended by the Federal Environmental Pesticide Control Act (FEPCA).

Virtually all of the current time-sharing usage by OTS is at the WCC. While there is only one current activity associated with the toxics substances program (Mathematical/ Modeling/Statistical Analyses), OPP is a major user of EPA timesharing services. Figure 3-22 summarizes the current workload for OTS.

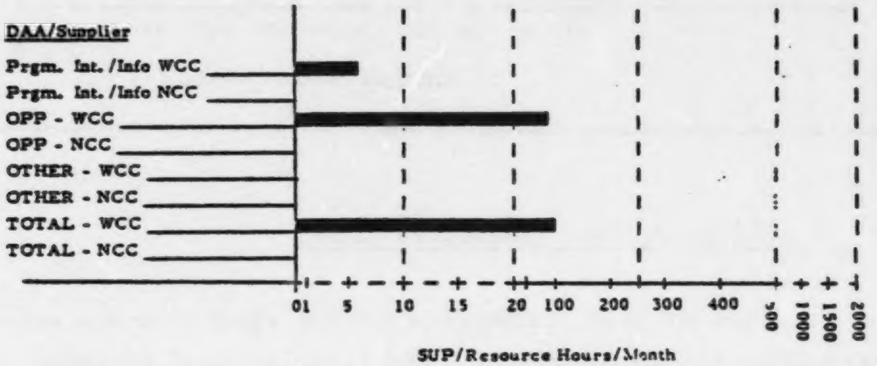


Figure 3-22. Office of Toxic Substances Current Workload

A. Office of Program Integration/Information (Toxics):

This office provides information support for EPA missions under the Toxic Substances Control Act. Programs supported include:

- Chemical testing and evaluation of toxic substances test data and development of testing procedures.
- Hazard assessment by prediction of levels of pollutants and correlation of biological effects with chemical structures.
- Environmental monitoring by assessment of chemical levels, manufacturing and disposal techniques, and uses of chemicals.
- Development of regulations for use and manufacture of chemical substances.

- **Evaluation of chemicals and development of recommendations for regulatory action.**

The Mathematical Modeling/Statistical Analyses application is the system of greatest current ADP workload for toxics programs. The system provides modeling and analysis capability for predicting and monitoring hazard levels of pollutants. Other systems utilized include bibliographic data bases for storage of back-up test and assessment data; word processing; and SAROAD/STORET for support in development of monitoring and hazard assessment programs. Current workload is shown in Figure 3-23.1.

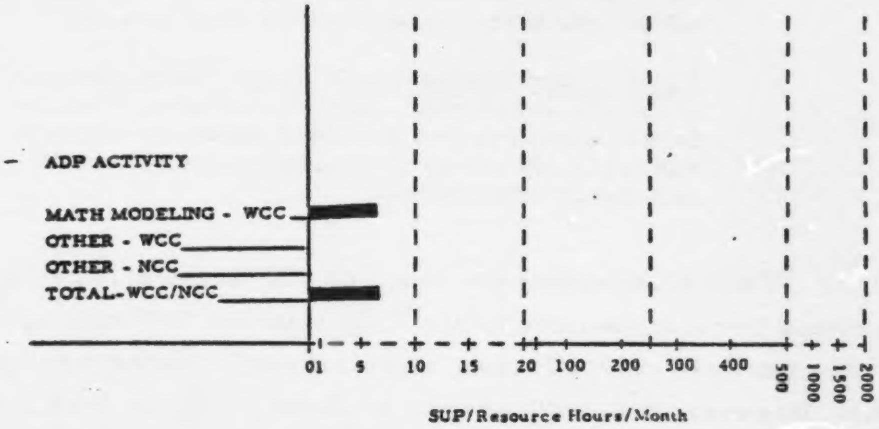


Figure 3-23.1. Office of Program Integration and Information (OTS) Current Workload

B. Office of Pesticide Programs (OPP)

This office is responsible for developing standards, criteria and national policy related to pesticides. The legislative mandate for this organization is the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The following functions are performed by divisions within this office:

- Operations Division: provides primary interface of Pesticide Programs with Regional Offices and States. Responsible for State applicator certification and training programs... maintains nationwide pesticide accident reporting system.
- Technical Services Division: provides coordinated information systems and data processing, conducts health effects studies and environmental monitoring... disseminates routine pesticide information, and performs laboratory services in the pesticides field... processes requests for pesticide information under Freedom of Information Act.
- Registration Division: responsible for pesticides product registration and classification (general use or restricted) and establishment of pesticide residue tolerances on food. Determines conditions under which pesticide products may be sold.
- Criteria and Evaluation Division: develops criteria and standards... reviews currently registered pesticides and provides statutory appeals support... develops pesticides research needs and monitoring policy.

While all divisions are users of ADP services, the Technical Services Division operates as the focal point for OPP data processing. Accounts are often allocated organizationally rather than by ADP activity. However, the workload figures shown in Figure 3-23.2 have been allocated to ADP activities based largely on discussions with personnel from the Technical Services Division. Major ADP activities, all of which run at the WCC are as follows:

- Company Data System: an automated data catalog list utilized to identify, search, and locate hard-copy information collected on pesticides product testing; estimate of requests in FY78 is for over 60,000 documents.

- Ecological Monitoring Systems: a series of data base systems which contain monitoring data collected on the effect of pesticides use on man and environmental media such as soils, air, water, oceans and estuaries.

- Pesticides Product Information System (PPIS): supports the requirement for registration and classification of all pesticides produced and used; system is used to control the registration of pesticides, study the efficacy of the pesticide program, produce analytical reports and support compliance and cancellation activities.

Other ADP activities used by this office include the Economic Modeling System and Automated Library Support. A separate activity, Index to Pesticide Chemicals is being broken out from the PPIS activity.

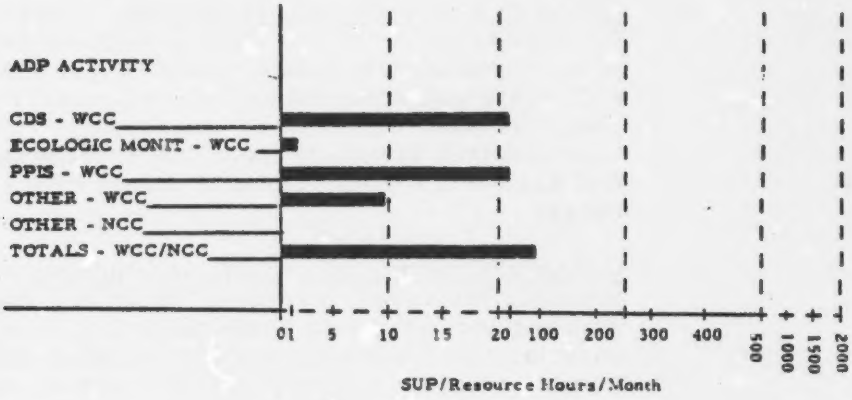


Figure 3-23.2. Office of Pesticides Programs (OPP) Current Workload

3.4.7 Office of Research and Development (ORD)

ORD conducts a comprehensive research and development program to provide the following:

- Scientific and technical base for reasonable standards and regulations
- Standardized methods to measure and assure quality control in programs to assess environmental quality, implement regulations and enforce standards
- Cost-effective pollution control technology and incentives for acceptance of environmentally sound options
- Scientific, technical, socio-economic and institutional methodologies needed to judge environmental management options and balance these options against competing national needs

The following DAA level offices and associated laboratories provide operating programs to support these missions:

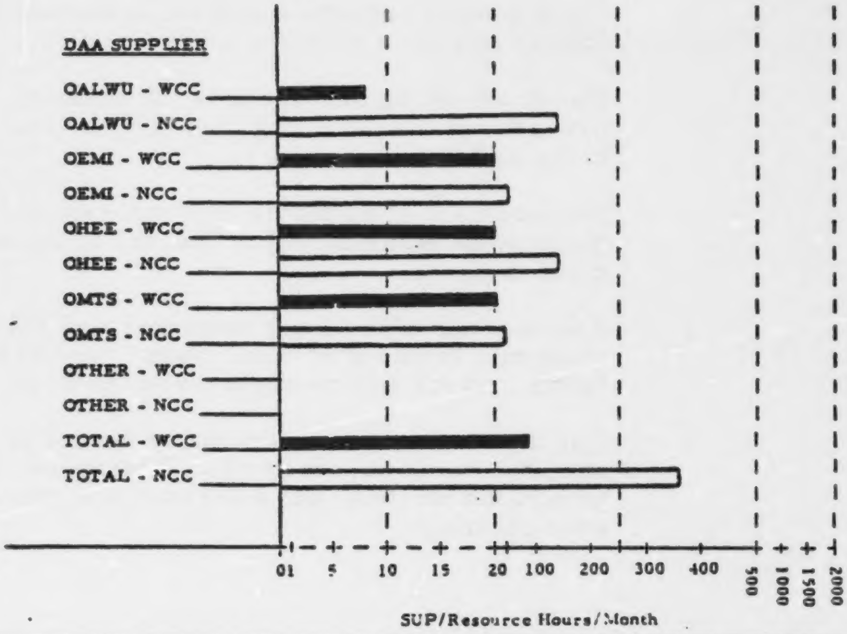
- Office of Air, Land and Water Use: responsible for research, development and demonstration of environmentally sound water supply systems and waste management activities; control of pollution from agriculture and forestry; transport and fate of pollutants in the environment; and area-wide environmental management strategies.
- Office of Energy, Minerals, and Industry: responsible for assessing, developing, and demonstrating technology to abate pollution from industrial point sources; and for planning and administering a comprehensive Federal energy and environmental research, development, and demonstrations program.

- Office of Health and Ecological Effects: responsible for determining the human health and ecological effects of pollution.

- Office of Monitoring and Technical Support: responsible for the development of reference or standard environmental measurement and monitoring equipment, techniques and systems, as well as development of Agency-wide quality assurance programs including standardization of analytical methods and sampling techniques.

Detailed discussions for each DAA area and major laboratories are presented in the following subsections. Figure 3-24 shows the current ADP workload for ORD.

Figure 3-24. Office of Research and Development Current Workload



A. Office of Air, Land and Water Use (OALWU)

The Office of Air, Land, and Water Use is responsible for planning, managing, and evaluation of a comprehensive program for the following activities:

- Development and demonstration of cost-effective methods for the prevention or management of pollutant discharge or waste disposal into the environment, except those related to energy, mineral, or industrial processes.
- Development and demonstration of methods for the management of the impact of land and water use activities on air and water quality.
- Development and demonstration of optimum methods for the total environmental management of pollutants which originate from multiple sources and are transported or exert their effects through one or more media.
- Development of models and other methods for linking source emissions to exposure.
- Development of new methods, equipment, and procedures for detecting, identifying and measuring pollutants.
- Development of optimum mechanisms for implementing environmental control or management methods.
- Assessment of the environmental and socioeconomic impacts of land, water, and air pollution control and management activities.
- The development and demonstration of such specific items as: methods for disposal of hazardous wastes, and alternative methods of pest control.

This office operates the following facilities in support of these programs:

- Environmental Sciences Research Laboratory (ESRL)-Research Triangle Park, North Carolina
- Municipal Environmental Research Laboratory (MERL)-Cincinnati, Ohio
- Environmental Research Laboratory (ERL)-Ada, Oklahoma
- Environmental Research Laboratory (ERL)-Athens, Georgia

ADP workload for 1977 is presented for OALWU in Figure 3-25. The following programs and ADP functions are performed at OALWU facilities:

1. ESRL-RTP (Research Triangle Park, N.C.)

Program Objectives

To develop means of measuring and monitoring the air quality and to determine the effects of gaseous and particulate air pollutants. More specific program objectives are:

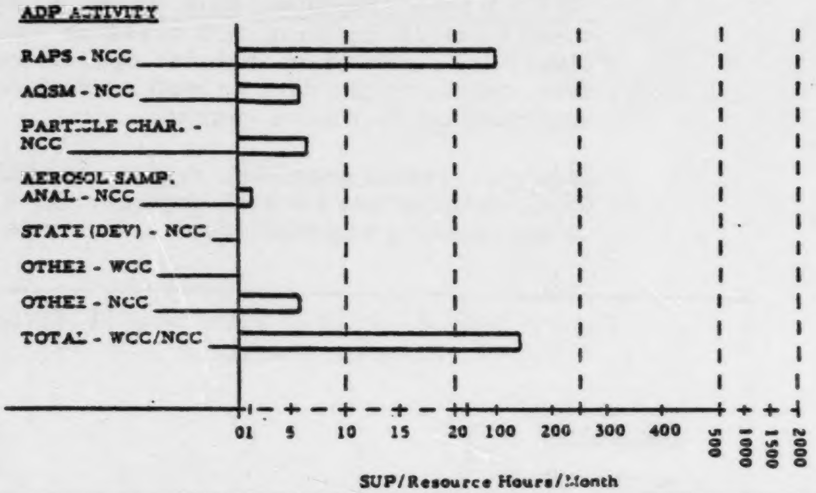
- To determine measurement system performance specifications
- To determine the effects of pollutants from stationary and mobile sources.
- To determine the effects of pollutants on cancer incidence.
- To develop new or improved methodology and instrumentation technology.
- To develop emission sampling and analytical technologies.
- To characterize atmospheric pollutants.

ESRL-RTP operates several major data systems to support these objectives. These systems are described below and their 1977 workloads are represented in the charts in Figure 3-25.1.

- RAPS (Regional Air Pollution Study): a research program to validate, develop and improve air pollution simulation models through data collected by a ground-based network supported by air measurements in the St. Louis, Missouri Air Quality Control Region.
- AQSM (Air Quality Simulation Model): provides rapid response on applications of air quality models to EPA headquarters, regions and laboratories; analysis of air quality data; and user liason for EPA's Air Quality Simulation models.

- **Particle Characterization:** provides acquisition, analysis and modeling of aerosol data and particle characterization.
- **Aerosol Sampling and Analysis:** provides "fine" analysis of data from aerosol samples in connection with X-Ray Fluorescence, for particle sizing, and for instrument evaluation.
- **STATE (Sulfate Transport and Transformation in the Environment):** provides regional coverage for specific periods of time using mobile trailers for support of sample collection; and performs heavy analysis of data collected. This system will replace RAPS in 1980.

Figure 3-25.1. ESRL-RTP (OALW) Current Workload



2. MERL - Cincinnati, Ohio

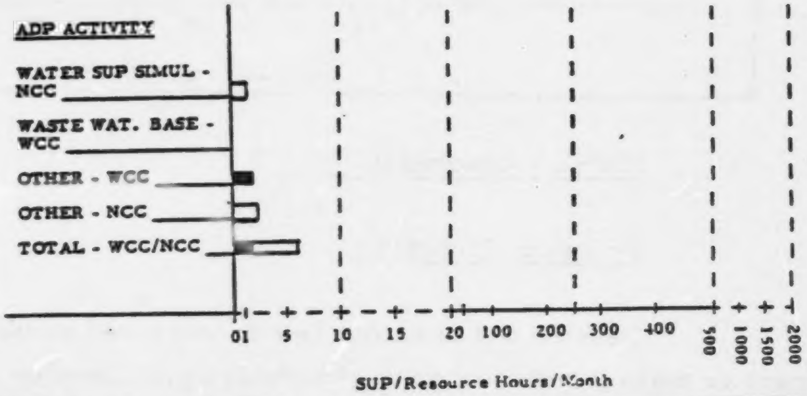
Program Objectives

Develop and optimize new or improved wastewater treatment or management technology/methodology. Develop effective methods for handling solid and hazardous wastes, resource recovery, or the use of wastes as fuel. Develop urban runoff management techniques. Develop and optimize new or improved water supply treatment or management technology/methodology. Develop environmental management methodology to serve the water planning area.

These objectives are supported by the ADP systems described below.

- Water Supply Simulations: provides determination of the cost of water supply; economic effects of cancer and other diseases affected by drinking water compared to cost and benefits of new techniques in water purification; simulation of cost of water supply distribution in specific areas, measures demand of use, and evaluates cost.
- Waste Water Treatment Data Base: a developmental system building data bases on waste water treatment plants; data includes operational cost data, performance data as well as data on insufficient performance causes.
- Other: systems providing support to MERL - Cincinnati include several engineering, economic, urban planning and statistical analysis packages.

Figure 3-25.2. MERL-CINCINNATI (OALWU) Current Workload



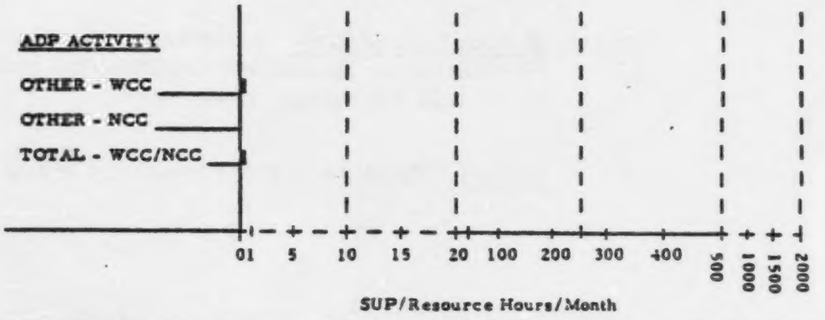
3. ERL - Ada, Oklahoma

Program Objectives

Develop technical information in support of groundwater basin management and optimization. Determine the transport and fate characteristics of energy related pollutants/pollutant combinations in the atmosphere and in fresh surface and groundwaters. Develop technology to eliminate the discharge of all pollutants from industrial point sources. Develop manuals of practice to prevent and/or control environmental damages from the materials production industry. Acquire new or advanced technology for the treatment of municipal wastewater effluents using the soil as a treatment media. Develop methods for disposing of animal wastes in an environmentally safe manner.

Ada's usage of the time-sharing facilities is limited to several relatively small systems including an Ion Movement system, a Library Document Control system, a Personnel Management system, and other general ADP support systems.

Figure 3-25.3. ERL-ADA (OALWU)
Current Workload



4. ERL - Athens, Georgia

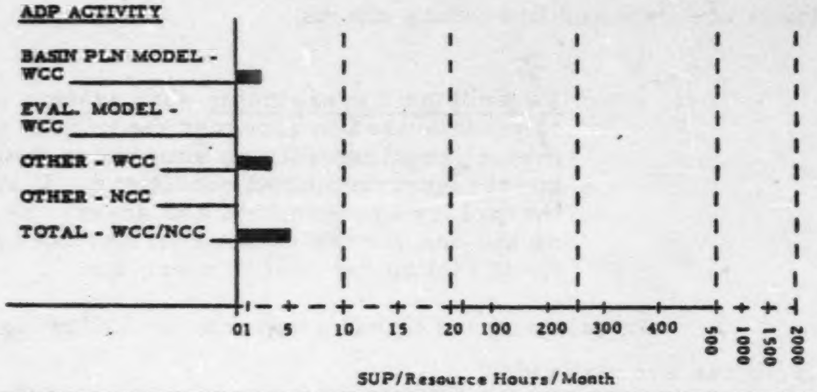
Program Objectives

Develop new techniques to identify chemical constituents of water and soil. Develop improved capabilities to identify and measure drinking water contaminants. Develop methods for the measurement of energy related pollutants. Determine the transport and fate characteristics of pollutants including toxic substances and energy related pollutants on fresh water ecosystems. Provide predictions of the impacts resulting from the discharge of point and non-point source pollution into surface waters. Develop methodology to preserve or restore the desirable environmental quality of areas affected by non-irrigated agriculture. Develop methods to assess and control the adverse environmental effects of forestry watershed activities.

These objectives are supported by the systems described below.

- Basin Planning Models: provide basin-wide pollution analysis methodologies. Models include: a hydrologic unit management module, a socio-economic impact module, a specific pollutant module, and basin planning and area-wide planning modules.
- Evaluation Model: provides the methodology for evaluating potential environmental problems from point and non-point sources.
- Other: Field data collection and word processing.

Figure 3-25.4. ERL-Athens (OALWU)
Current Workload



B. Office of Energy, Minerals, and Industry (OEMI)

The Office of Energy, Minerals, and Industry is responsible for planning, managing, and evaluating a comprehensive program for the following activities:

- Assessment of the environmental and socio-economic impacts of energy and mineral resource extraction, processing, conversion, and utilization systems, and of other industrial operations.
- Development and demonstration of cost-effective methods for control and management of operations with environmental impacts associated with the extraction, processing, conversion, transmission and utilization of energy (except transportation utilization), and mineral resources, and with industrial processing and manufacturing facilities.
- Identification and evaluation of alternatives, including conversion measures, for these systems and operations.
- Coordination of intra and interagency research activities associated with the environmental aspects of energy and mineral resources extraction, processing, conversion and utilization.

The OEMI headquarters office (OEMI-HQ) maintains and operates the following system in support of its programs; 1977 workloads are depicted in ensuing charts.

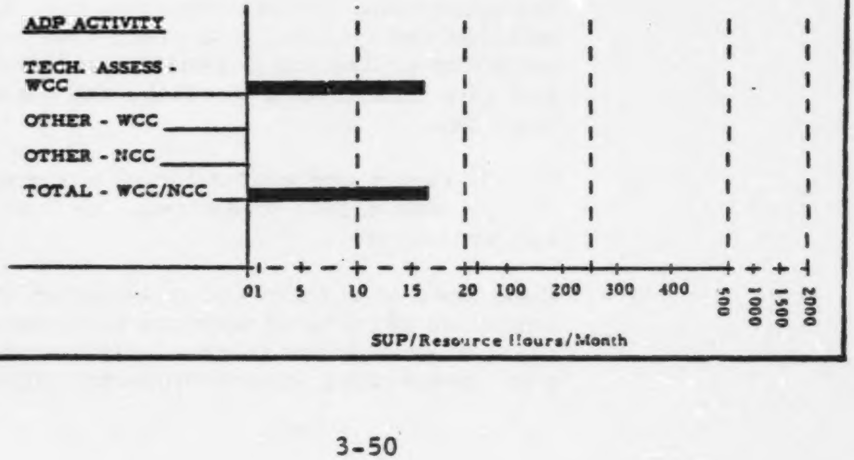
- Technology Assessment: this system is a series of models used to forecast the impact of environmental requirements on economic, sociological, energy/environmental conditions. It supports technology assessments and special reports such as the one for the Council on Environment Quality (CEQ) on the cost of clean air.

In carrying out OEMI programs the following laboratory facilities are utilized:

- Industrial Environmental Research Laboratory (IERL)-Research Triangle Park, North Carolina
- Industrial Environmental Research Laboratory (IERL)-Cincinnati, Ohio

Current ADP workload for these facilities is shown in Figure 3-26. The following subsections describe programs in ADP functions supporting these facilities.

Figure 3-26.1. OEMI-HQ
Current Workload



1. IERL - RTP (Research Triangle Park, N. C.)

Program Objectives

Contribute to the identification, characterization, assessment and development of control technology for pollutants associated with electric utilities, industrial stationary combustion sources and materials processing industry. Specific objectives include the following:

- Development of advanced technologies for pollution control of waste recovery, indoor air quality, energy conserving industrial processes and advanced energy systems.
- Development of advanced technology and assessment for fuel processing.
- Develop technology to eliminate emission pollutants from materials processing industry point sources.
- Develop manuals of practice to prevent and/or control environmental damage from materials production industry.
- Program planning, budget control, and information transfer.

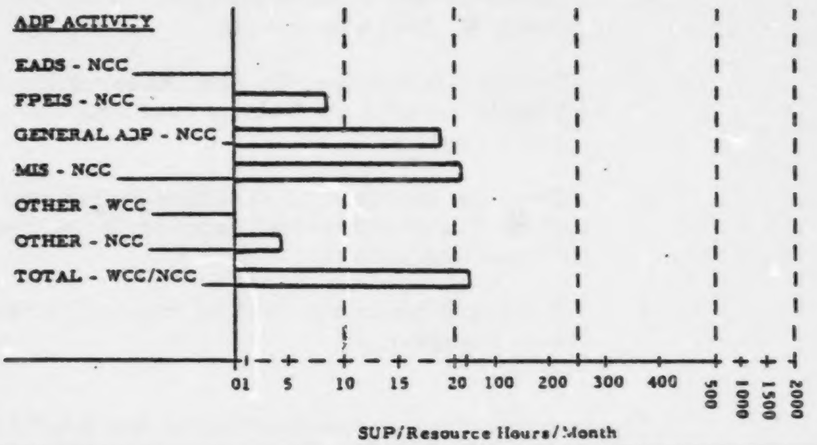
These objectives are supported by the ADP systems described below.

- EADS (Environmental Assessment Data Base): this is a developing system which will consist of a large data base and software modules for providing efficient handling of environmental assessment data needed by IERL's assessment projects.
- FPEIS (Fine Particle Emissions Information System): this is an automated emission inventory system which contains information on particle size distribution, and chemical, physical,

and bioassay data resulting from tests conducted by the Midwest Research Institute.

- General ADP: provides general data processing and program support.
- MIS (Management Information System): this system parallels the complete cycle of the Lab's research program: program planning, active extramural funds tracking, active project monitoring, and storage of completed project data for historical perspective. The system supplements manpower shortages by automating those functions which are suited to ADP.

Figure 3-26.2. IERL-RTP (OEMI) Current Workload



2. **IERL - Cincinnati, Ohio**

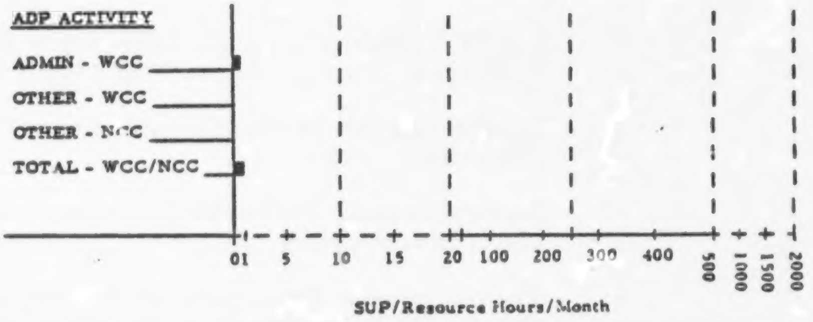
Program Objectives

To develop and demonstrate technologies to prevent, control or abate pollution from environmental impacts associated with energy and mineral resource operations and with industrial processing and manufacturing as specifically related to organic chemicals and products, non-ferrous metals and inorganic chemical and products, food and wood products, mining and resource extraction, oil and hazardous material spills, power technology and conservation, and fuels technology.

These objectives are supported by the ADP systems described below.

- o Admin (Administrative support): this activity includes various systems in support of laboratory activities including commitment register tracking, position management, and mailing labels.
- o Other: includes mine drainage/environmental sampling system, a Management Information System/Tickler File, a Work Plan System, and other technical data bases.

Figure 3-26.3. IERL-Cincinnati (OEMI)
Current Workload



C. Office of Health and Ecological Effects (OHEE)

The Office of Health and Ecological Effects is responsible for planning, managing, and evaluating a comprehensive research program for the:

- Development of health and ecological data needed for the establishment of standards and criteria or guidelines for those components of the environment in which specific pollutants or activities may require control.
- Determination of the fate, transport, and exposure effect, in relation to the ecosystem, of environmental pollutants, singly and in combination.
- Development and verification of methods and models for analyzing the socio-economic impact of overall environmental degradation and alternative control strategies.
- Comprehensive assessments of the environmental and socio-economic impacts of existing and proposed policies and standards.
- Coordination of the Agency's policies and programs related to carcinogens and similar agents.

In carrying out these programs OHEE operates the following laboratory facilities:

- Health Effects Research Laboratory (HERL)-Research Triangle Park, North Carolina
- Health Effects Research Laboratory (HERL)-Cincinnati, Ohio
- Environmental Research Laboratory (ERL) - Corvallis, Oregon
- Environmental Research Laboratory (ERL) - Grosse Ile, Michigan
- Environmental Research Laboratory (ERL) - Narragansett, Rhode Island
- Environmental Research Laboratory (ERL) - Gulf Breeze, Florida

Current ADP workload for these laboratories is shown in Figure 3-27. The following subsections describe the programs and ADP functions performed at these locations.

1. HERL - RTP (Research Triangle Park, N.C.)

Program Objectives

To define the influence of environmental stress on human health. To recognize and to define new environmental problems. To develop environmental standards for the protection of human health and welfare. To evaluate the health benefits of improved air quality resulting from the establishment of emission standards.

These objectives are supported by the ADP systems described below.

- Special Studies: provides data processing support for special studies undertaken to support health effects research.
- New Epidemiological Studies: this activity provides data processing/analysis of data collected for epidemiological studies for evaluation of existing environmental standards, for obtaining health intelligence for new standards, and for documentation of health benefits of air pollution controls.
- Mortality Studies: provides a definition of mortality models as a function of meteorological and pollutant variables. The models will allow prediction of mortality associated with increased pollution levels.
- CHESS (Community Health & Environmental Surveillance Studies): processes large volumes of data collected under the Community Health & Environmental Surveillance Studies and provides statistical analyses of this data for the purpose of evaluating existing environmental standards, obtaining health intelligence for new standards and documenting the benefits of air pollution control.
- Physiological Studies: used to validate data from the laboratory minicomputers, create a valid data base, and produce summary trend and statistical reports.

- Experimental Biology Support: provides data management and statistical analysis for data collected by various research scientists in the Experimental Biology Laboratory.

- Aerometric Systems: provides storage and retrieval of aerometric data in support of health research studies.

- Statistical Support: provides statistical analysis support for health research studies through the use of existing statistical software and the development of new software where needed.

- Pesticides Toxicology: provides data processing, data management and analysis for toxicological research data. Experiments are conducted to assess the toxicity and dose responses of toxic chemicals in support of the substitute chemicals program.

- MIS (Management Information System): provides program management for HERL personnel.

- Other: includes a Financial Record Accounting system, a Position Management System and a BIO-CHEM lab support system.

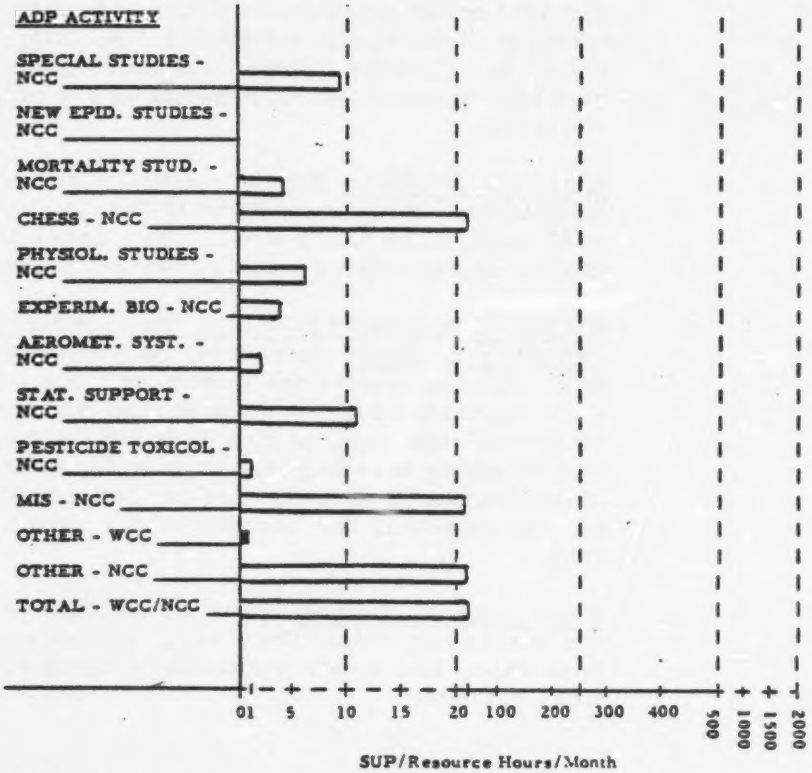


Figure 3-27.1. HERL-RTP (OHEE) Current Workload

2. HERL - Cincinnati, Ohio

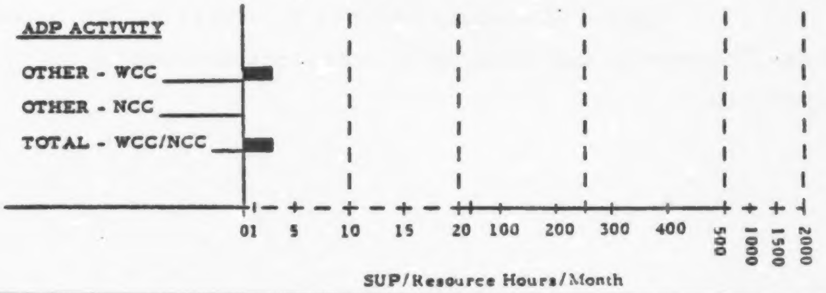
Program Objectives

Determine the health effects caused by exposure to energy related pollutants. Determine the health effects resulting from the treatment and disposal of wastewater and sludge. Determine the public health consequences of exposure to pollutants associated with transportation. Examine the contribution of environmental carcinogens to cancer incidence. Determine the nature and concentrations of contaminants in water supplies. Determine the exposure-effect relationship between health and certain non-pesticide environmental contaminants. Develop reports to review and analyze environmental and health effects by pollutants.

These objectives are supported by the ADP systems described below.

- o REEP: provides toxicological studies of air and water pollutants (system run on the National Institutes of Health DEC 10 facility)
- o Other: includes the TAME, Primary Data, and Independent Organics systems.

Figure 3-27.2. HERL-Cincinnati (OHEE) Current Workload



3. ERL - Corvallis, Oregon

Program Objectives

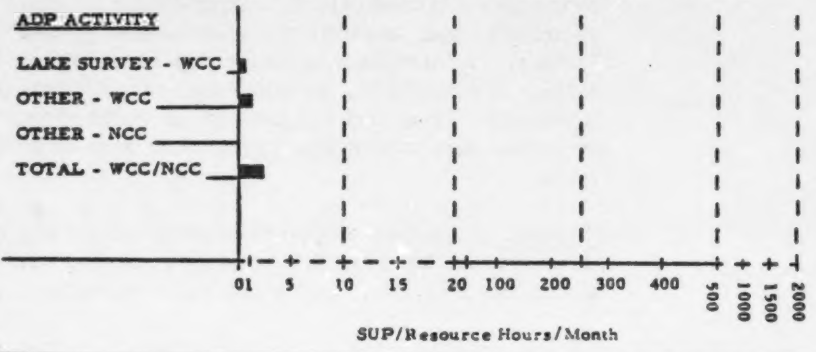
Contribute to the development of quality criteria for water and proposed effluent standards. Determine the effects of specific pollutants and pollutant combinations on representative or key sensitive organisms in freshwater ecosystems. Determine the effects of specific pollutants and pollutant combinations on ecosystem-level parameters and processes which are dependent on particular function groupings of organisms rather than any particular species. Identify the physical, chemical and biochemical transformation of pollutants which result from their introduction to or passage through freshwater ecosystems. Determine the environmental requirements and limits for freshwater organisms.

These objectives are supported by the ADP systems described below.

- Lake Survey: provides information on the levels of phosphorus in lakes throughout the nation. The data collected was run through the Sample Handling and Verification System to produce input to STORET and other files.
- Other: includes a Water Pollution model, a Lake Eutrophication model, and a Plume Dispersion model.

ERL - Corvallis utilizes timesharing facilities at Oregon State University and local minicomputers to support many of their ADP activities.

Figure 3-27.3. ERL-Corvallis (OHEE)



4. ERL - Grosse Ile, Michigan

Program Objectives

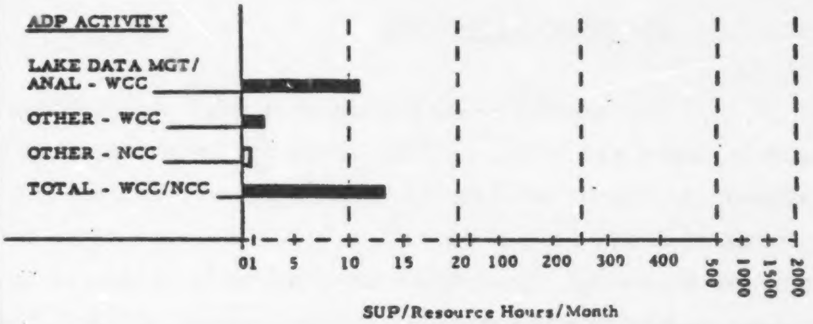
To conduct research on ecological systems particularly to quantify cause and effect relationships for fresh water systems with emphasis on the Great Lakes. This research will lead to better management of Great Lakes Water Quality. More specific objectives include the following: Determine phytoplankton response to alternative nutrient reduction programs for Lake Ontario, Lake Erie, Lake Huron, Lake Michigan, Lakes in Series, and Saginaw Bay. Determine source, fate, and effect of specific pollutant combinations including pesticides and other hazardous substances in the Great Lakes, Saginaw Bay, and other specified fresh water bodies. Develop quantitative evaluation techniques for use in evaluating ecosystem responses to pollutant sources. Quantify and model physical, chemical, and biological transport and transformations of pollutants in fresh water ecosystems.

These objectives are supported by the ADP systems described below.

- **Great Lakes Water Quality Models (GLWQM):** provides mathematical simulation of physical, chemical and biological processes in the Great Lakes. Activities include the simulation of water circulation, production of phytoplankton biomass, fate and transport of hazardous materials, and sediment transport and resuspension.

- **Other:** includes a Hydrodynamic model, a Laboratory Statistical Support system, a statistical analysis system, and graphics systems.

Figure 3-27.4. ERL-Grosse Ile (OHEE) Current Workload



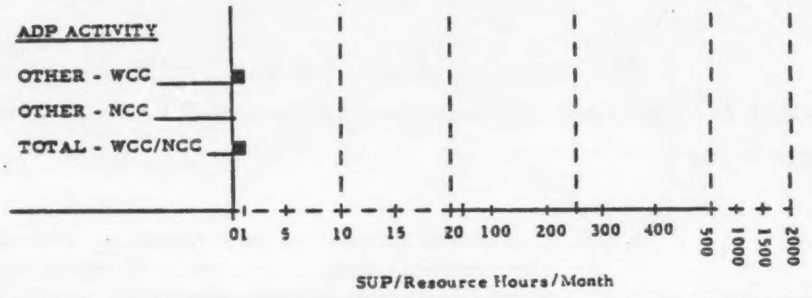
5. ERL - Narragansett, Rhode Island

Program Objectives

Develop a research program on ecological systems particularly to determine the exposure-effect relationships in marine ecosystems. Determine the effects of specific pollutant and pollutant combinations on selected marine/estuary organisms and ecosystems. Provide information for use in developing water quality criteria for maritime and estuarine waters. Develop baseline information and assess methodology for reclamation of areas impacted by energy resource development. Develop methods to measure the relative health of an ecosystem. Acquire knowledge of routes and rates of various pollutant movements through the ecosystem.

Narragansett's usage of the time-sharing facilities is limited to several small systems including a Bioassay Methods system, an Ecosystem Analysis system, a Chemical Analysis system, and other general ADP support systems.

Figure 3-27.5. ERL-Narragansett (OHEE) Current Workload



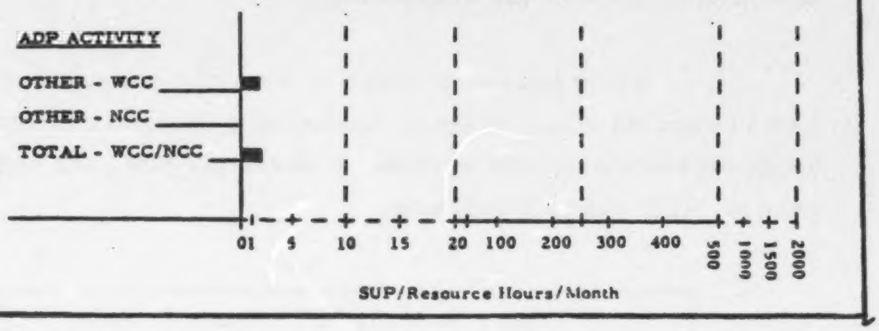
6. ERL - Gulf Breeze, Florida

Program Objectives

To develop a capability to model the resistance and effects of toxic materials in coastal and estuarine ecosystems, to provide statistical and data base management services for bioassay experimental research, to optimize text editing procedures.

Gulf Breeze's usage of the time-sharing facilities is limited to several small systems including an Ecosystem Modeling system, a Bioassay Statistics system, a Data Management system and other general ADP support systems. A Digital Equipment PDP 11/45 minicomputer provides local data acquisition and data analysis capability.

Figure 3-27.6. ERL-Gulf Breeze (OHEE) Current Workload



D. Office of Monitoring and Technical Support (OMTS)

The Office of Monitoring and Technical Support is responsible for planning, management and evaluating a comprehensive program for:

- The development of reference or standard environmental measurement and monitoring equipment, techniques and systems.
- The development of Agency-wide quality assurance programs, including standardization of analytical methods and sampling techniques, and quality control.
- The dissemination of scientific and technical knowledge, including technology transfer.
- Technical support to the Agency including monitoring and analytical support, quality control, and laboratory and staff development.

OMTS operates the following laboratory facilities in carrying out these programs:

- Environmental Monitoring & Support Laboratory (EMSL) - Research Triangle Park, North Carolina.

- Environmental Monitoring & Support Laboratory (EMSL) - Cincinnati, Ohio
- Environmental Monitoring & Support Laboratory (EMSL) - Las Vegas, Nevada

Current ADP workload for these facilities is shown in Figure 3-28. The following subsections describe the programs and ADP functions performed at these facilities.

1. EMSL - RTP (Research Triangle Park, N.C.)

Program Objectives

To provide environmental monitoring support to the Agency through the evaluation of ambient and source monitoring instrumentation, collection and/or measurement of data, and the development of standard monitoring methods and quality control procedures. More specifically, the objectives include:

- Evaluation of field monitoring instrumentation and equivalency of methods.
- Collection and/or measurement of environmental samples.
- Standardization of monitoring methods and quality control procedures.
- Development of environmental quality assurance data.
- Registration of designated fuel and fuel additives.
- Assessment and analysis of data.
- Regional office and general monitoring support.
- Special research monitoring projects.

. These objectives are supported by the ADP systems described below.

- o NCPSS (Non-Criteria Pollutant and Special Study): provides acquisition, management, analysis and data reporting from non-criteria pollutant networks and special monitoring projects.
- o Other: includes a Management Information System and Statistical and Technical analysis systems.

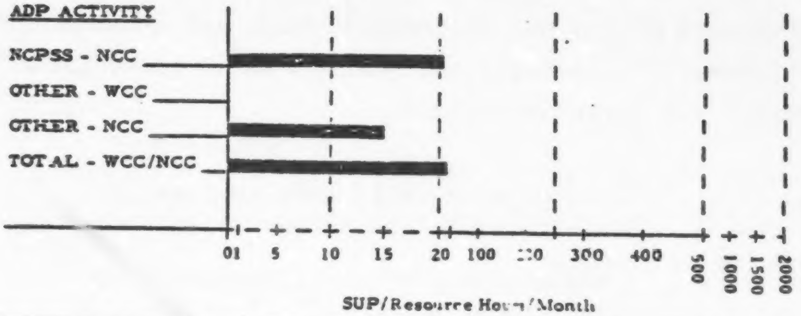


Figure 3-28.1. EMSL-RTP (OMTS) Current Workload

2. EMSL - Cincinnati, Ohio

Program Objectives

To conduct research and development programs in monitoring, analytical methods, quality assurance and technical support. Specific objectives are as follows:

- o Develop new or advanced measurement technology to support water monitoring programs

- Provide technical expertise and consultation, laboratory support services, and quality assurance techniques for Agency programs and Regional offices on matters related to analysis of water, waste and sediments.

- Develop improved procedures for the concentration, recovery and identification of virus from ambient waters and wastewaters.

- Provide validated environmental quality baseline data for areas affected by new energy development.

- Develop new or advanced monitoring methods for energy related parameters.

- Develop quality assurance methodology to support water monitoring programs.

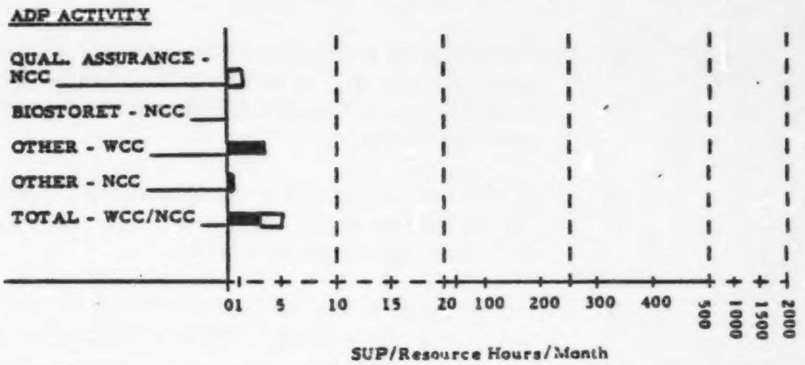
These objectives are supported by the ADP systems described below.

- Quality Assurance: provides comparison of results from laboratories vs. known samples; and water supply analysis.

- BIOSTORET (Storage and Retrieval of Biological Water Quality Data): supports the storage and retrieval of biological data (incorporated into the STORET system).

- Other: includes an Environmental Chamber Control system, an Administrative system, and a Management Information system.

Figure 28.2. EMSL-Cincinnati
Current Workload



3. EMSL - Las Vegas, Nevada

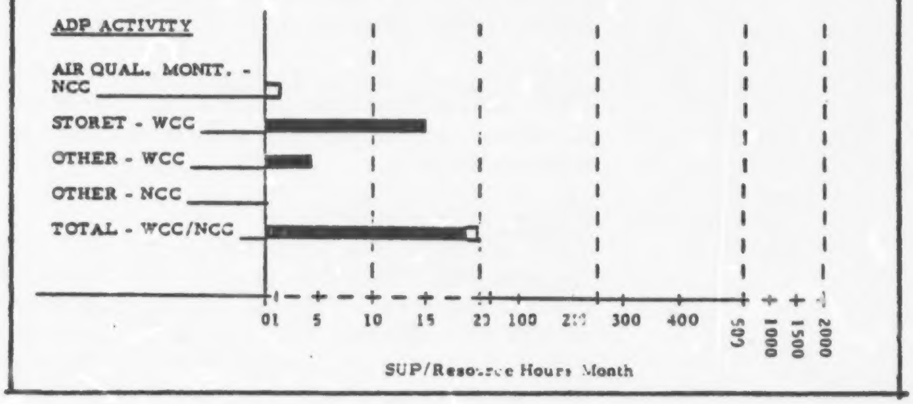
Program Objectives

To assess the environmental impact of aircraft emissions, carcinogens (airborne) and major energy development. Support regional offices in documenting pollution sources, air and water monitoring and analytical, quality control and laboratory evaluation services. Determine environmental effects of geothermal energy resource exploration on underground water. Develop evaluation criteria for acquisition or scientifically and legally defensible environmental data.

These objectives are supported by the ADP systems described below.

- Air Quality Monitoring: provides support for ground monitoring and airborne sensing of air quality data.
- STORET: provides Storage and Retrieval of water quality data.
- Other: includes a Photographic Quality Control system, a Laboratory Management system, and an Engineering Analysis system.

Figure 3-28.3. EMSL-Las Vegas Current Workload



3.4.8 Staff Offices

The staff offices provide the EPA Administrator with support in a range of specialized operations needed to ensure the overall functioning of the Agency. The EPA staff offices consist of:

- Office of Administrative Law Judges
  This office presides over and conducts formal hearings and issues initial decisions, if appropriate.

- **Office of Civil Rights**
  This office provides the Administrator with an overview and independent appraisal capability for equal opportunity and civil rights activities related to implementing programs for the career advancement of minorities and women in the Agency.

- **Office of Federal Activities**
  This office coordinates and develops policies and procedures related to EPA's review of Federal agency environmental impact statements and preparation of EPA's own impact statements... coordinates EPA policies and programs to deal with environmental problems arising at Federal facilities and Federally supported or authorized activities.

- **Office of General Counsel**
  This office serves as the principal legal advisor to the Administrator and as chief law officer of the Agency.

- **Office of International Activities**
  This office develops policies and procedures for direction of the Agency's international programs and activities.

- **Office of Legislation**
  This office is the principal focus of Congressional liaison with the Agency... reviews and advises the Administrator on all legislation originating within or affecting EPA... performs legislative drafting services, coordinates the preparation of testimony, and reviews transcripts of Congressional hearings.

- **Office of Public Affairs**
  This office explains the workings, concerns and actions of EPA to the public, and represents the Administrator in relations with the press and other information media.

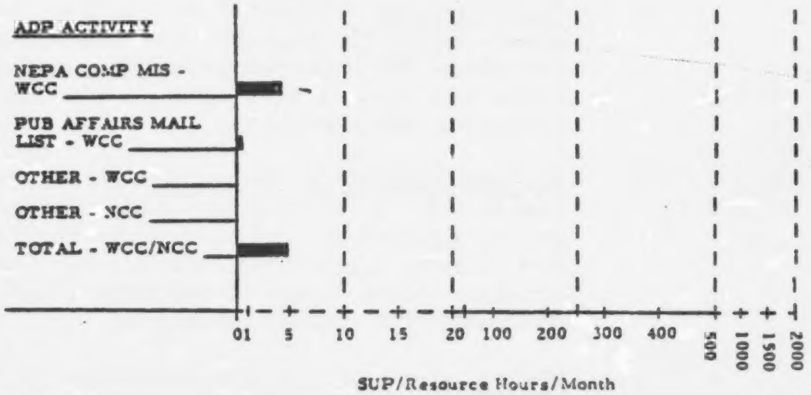
- **Office of Regional and Intergovernmental Operations**
  This office acts as liaison between the Agency, the Regions, and State and local officials.

ADP activities utilized by these offices are described below and summarized by current workloads in Figure 3-29. All staff activities are processed at WCC.

- **NEPA Compliance MIS:** a group of systems used by the Office of Federal Activities to track the compliance of Federal Facilities with environmental standards, to monitor the environmental soundness of Federal actions and EPA decisions, and to control correspondence.
- **Public Affairs Mailing List:** provides a back-up mailing list containing data on about 30,000 addresses which receive news releases and other public information.

Other ADP used by staff offices at EPA are the DOCUMERICA activity (Office of Public Affairs) and Congressional Information activity (Office of Legislation). Bowne Time-Sharing is also used by the Office of Public Affairs in support of the President's Environmental Merit Awards Program (PEMAP) mailing list.

Figure 3-29. Staff Offices
Current Workload



3.4.9 EPA Regional Offices

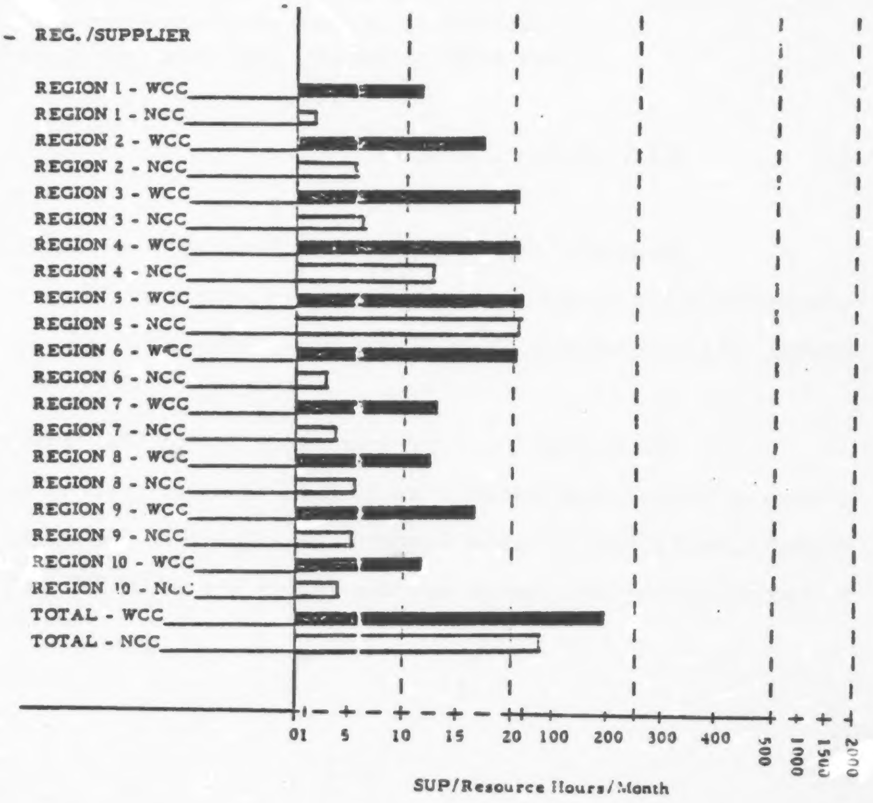
Each of the ten regional offices is responsible for the execution of the regional programs of the Agency. The Regional Administrator develops, proposes, and implements an approved regional program for comprehensive and integrated environmental protection activities. They are responsible for translating technical program direction and evaluation provided by the various Assistant Administrators and Heads of Headquarters Staff Offices into effective operating programs at the regional level, and exercise approval authority for proposed state standards, implementation plans, and other state environmental responsibilities.

The Regional offices operate the five general organizational and program areas described below:

- Management: provides planning and management guidance services and administrative management support to all components of the Regional Office.
- Surveillance and Analyses: conducts studies and collects, analyzes, and evaluates environmental quality data in support of regional monitoring requirements and enforcement programs.
- Enforcement: evaluates the current compliance status within the region; establishes goals and priorities for improving the degree of compliance, and selects strategies and techniques for achieving improvement.
- Air and Hazardous Materials: provides recommendations to the Regional Administrator for goals, priorities, and objectives for Regional Air, Noise, Radiation, Pesticides, Toxic Substances, Solid Waste Management, and R&D Technology Transfer Programs.
- Water: provides recommendations to the Regional Administrator for development, coordination, implementation, and evaluation of Water Quality Control and Water Supply Programs; assists the States in developing comprehensive water quality programs.

The ADP timesharing workload for each Region on the Washington Computer Center (WCC) and the National Computer Center (NCC) is represented for current year (1977) workload in Figure 3-30. As can be seen from the chart, total Regional workload for the current year is slightly heavier on WCC than on NCC. Regions 4, 5, and 10 currently operate their own PDP 11/70 minicomputers which are programmed to perform a share of their total ADP workload. These minicomputers provide a share of data reduction, analysis and administrative support which was previously performed by the WCC and NCC facilities. A discussion of the impact of regional use of minicomputers on future workload is given in Section 4 under projected regional workload.

Figure 3-30. Regions - Total Current Workload



ADP activities supporting the regional offices include the following systems:

- o Water Related: STORET, GICS, MSIS, FDRS, PCS, and various region or headquarters developed data collection, status tracking, data analysis and water quality modeling programs.

- o Air Related: SAROAD, NEDS, CDS, and various region or headquarters developed data collection, status tracking, data analysis and air qualith modeling programs.

- o Administrative Related: FMS (to be moved to WCC), PMIS (to be developed and installed at NCC), FRS, PPS, TSSMS, and various region developed data collection, status tracking and data analysis programs.

- o Miscellaneous Programs Related: SPCC, ERSS, PEMS, and various region or headquarters developed data collection, status tracking, data analysis, modeling and literature search programs for other categorical areas such as noise, radiation, solid waste and toxics.

A. EPA Region I Office

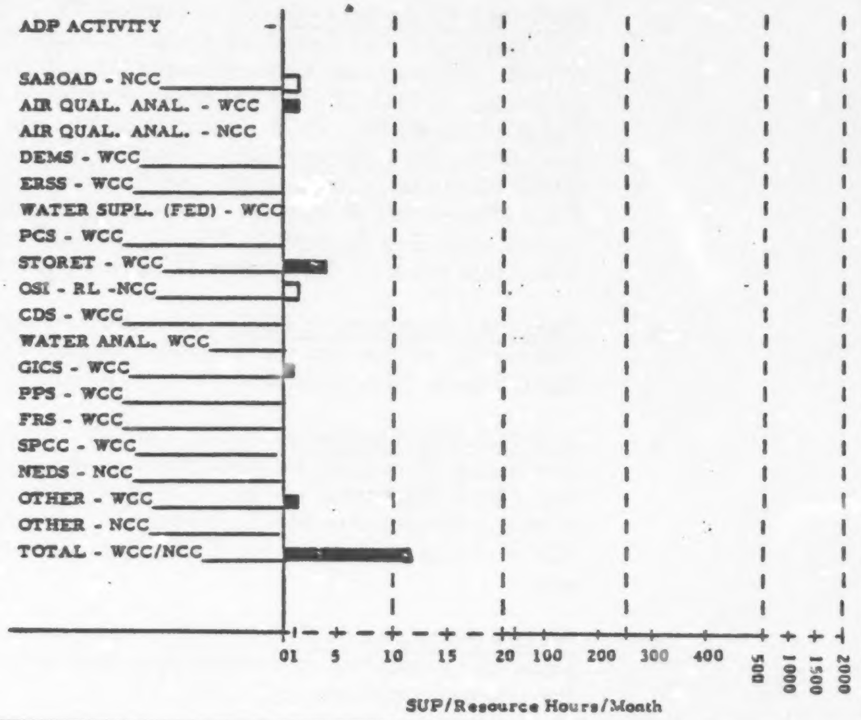
Region I, headquartered in Boston, Massachusetts, is responsible for administering EPA's programs in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

Maine and Vermont currently use STORET to maintain their Primary Monitoring Network as well as their portion of the National Water Quality Surveillance System. Analyses of the water quality data is performed by the states and the region via STORET and other user developed programs. These activities (the use of STORET) are funded by the region to provide the states with a mechanism to transmit data to EPA under the Federal Water Pollution Control Act requirement.

The ADP timesharing systems used by Region I are described below and are represented for current year (1977) workload in Figure 3-31.

- National Systems--WCC: includes STORET (Storage and Retrieval of water quality data), PEMS (Pesticides Enforcement Monitoring System), ERSS (Establishment Registration Support System), PCS (Permit Compliance System), CDS (Compliance Data System), GICS (Grants Information and Control System), PPS (Personal Property System), FRS (Formal Reporting System), SPCC (Spill Prevention Control and Countermeasure System).
- National Systems--NCC: SAROAD (Storage and Retrieval of Aerometric Data), NEDS (National Emissions Data System).
- Air Quality Analysis--NCC, WCC: provides analyses of technical information in support of the Air Programs, e.g., SIP reviews and revision, Alternate/Maintenance Planning, TCP's, EIS writing and review, Fuel Conversion Orders, etc.
- Water Supplies (FED)--WCC: provides maintenance of inventory of community and non-community water supplies.
- AQDS--WCC (Air Quality Data System): serves as an interim substitute for SAROAD during extended NCC/SAROAD instability.
- Water Analysis--WCC: provides the in-house modeling and analyses by EPA Region I for NPDES permits, environmental assessment, water quality planning, and regional water quality assessment.

Figure 3-31. Region 1 - Boston
Current Workload



B. EPA Region II Office

Region II, headquartered in New York City, is responsible for administering EPA's programs in New York, New Jersey, Puerto Rico, and the Virgin Islands.

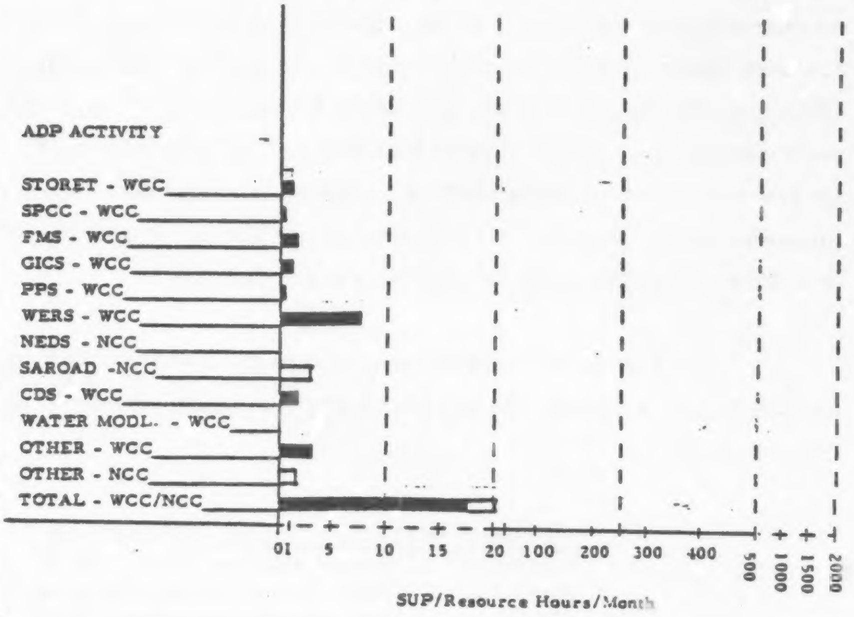
New Jersey and New York use the data in STORET to support annual Section 305(b) reports, the continuing Section 208/303(e) planning process of the Federal Water Pollution Control Act, and to retrieve toxic substance data. New York has primacy for operating its own water quality control programs and operates their own NPDES (National Pollution Discharge Elimination System) system on a Honeywell computer. New Jersey has the legal framework for primacy but implementation is impacted by budget and organization within the state bureaucracy. Puerto Rico uses very little ADP and there is little need for EPA program support in the Virgin Islands.

The ADP timesharing systems used by Region II are described below and are represented for current year workload (1977) in Figure 3-32.

- National Systems--WCC: STORET (Storage and Retrieval of water quality data), SPCC (Spill Prevention Control and Countermeasures), FMS (Financial Management System), GICS (Grants Information and Control System), PPS (Personal Property System).
- National Systems--NCC: NEDS (National Emissions Data System), SAROAD (Storage and Retrieval of Aerometric Data).
- WERS (Water Enforcement Regional Systems)--WCC: provides basic facility I.D. and permit development tracing functions, compliance and enforcement actions tracking, automated screening of Discharge Monitoring Reports, and building of efficient data bases of limits and reported values.

Other timesharing activities in Region II include systems used for water data collection and for meeting the region's reporting requirements for water quality, water supply, pesticides, and air data. A number of small systems used for administrative support are also maintained.

Figure 3-32. Region 2 - New York
Current Workload



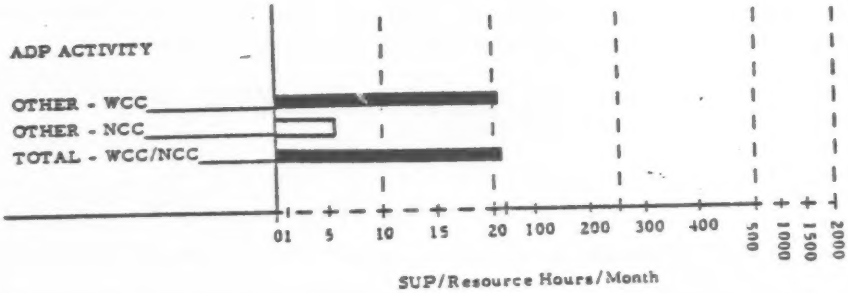
C. EPA Region III Office:

Region III, headquartered in Philadelphia, is responsible for administering EPA's programs in the states of Delaware, Maryland, Pennsylvania, Virginia, and West Virginia, and the District of Columbia.

Currently, non-EPA use of EPA's time-sharing systems is limited to STORET to facilitate the creation of a standardized water quality data base for use in support of Sections 208, 303(e), and 305(b) of Public Law 92-500. Access to other EPA systems is being granted to encourage the analysis and evaluation of other environmental data and to support the delegations of environmental programs to the states.

Region III uses all of the national systems and has developed several systems of its own to supplement the capabilities of the national systems (e.g. the Grants Tracking System for construction grants and the Management Information Control System and the Violation Tracking System for water enforcement). The total Regional use of all of these systems for the current year (1977) is shown in Figure 3-33.

Figure 3-33. Region 3 - Philadelphia
Current Workload



D. EPA Region IV Office

Region IV, headquartered in Atlanta, is responsible for administering EPA's programs in Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.

The primary use of EPA's ADP timesharing services by the states (except Alabama) is STORET. Water quality data is collected, analyzed, coded, and stored by most states in the region. The states and the Region use these data as input to models for wasteload allocations in support of NPDES and state permit programs, for writing annual reports to Congress, and as a data management system for the continuing water planning process.

Region IV operates a PDP 11/70 for use in preprocessing of input data and administrative support.

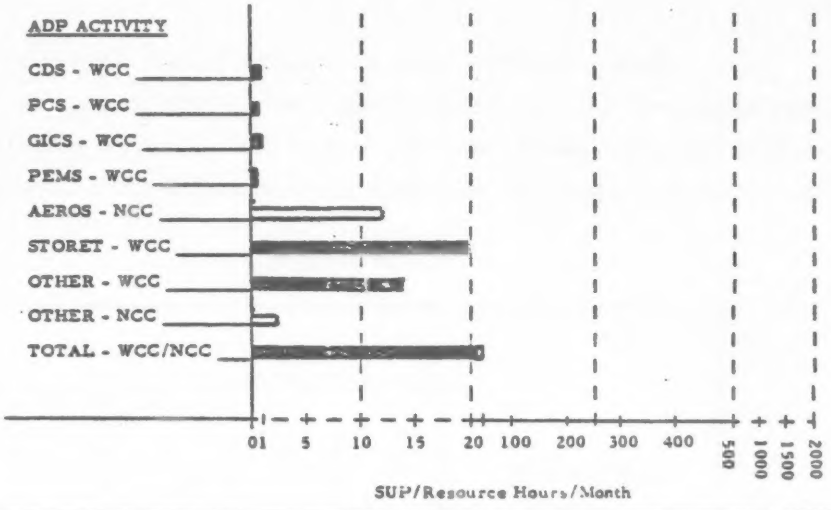
The ADP timesharing systems used by Region IV are described below and are represented for current year (1977) workload in Figure 3-34.

- National Systems--WCC: CDS (Compliance Data System), GICS (Grants Information and Control System), PEMS (Pesticides Enforcement Management System), PCS (Permit Compliance System, and STORET (Storage and Retrieval of water quality data).
- National Systems--NCC: SAROAD for air quality data.

Other timesharing systems used by Region IV include a laboratory automation activity, and other systems used for water data collection and for meeting the region's reporting requirements for water quality, water supply, pesticides, and air pollution. A number of small systems used for administrative support are also maintained.

The states within Region IV are currently using STORET extensively. Other systems used by the states are water modeling systems and the Carolina File which is an inventory system of point source information.

Figure 3-34. Region 4 - Atlanta
Current Workload



E. EPA Region V Office

Region V, headquartered in Chicago, is responsible for administering EPA's programs in Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

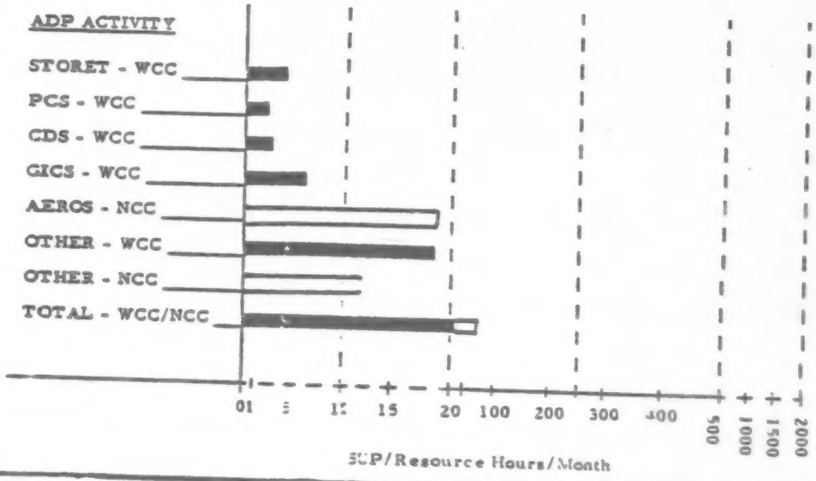
The only EPA data system used th these states is STORET. States enter and retrieve water quality data from STORET for planning purposes under PL92-500. Some states used systems other than STORET but such usage was discontinued after June 30, 1977.

The ADP timesharing systems used by Region V are described below and are represented for current year (1977) workload in Figure 3-35.

- **National Systems--WCC:** STORET (Storage and Retrieval of water quality data), PCS (Permits Compliance System), CDS (Compliance Data System), GICS (Grants Information and Control System).
- **National Systems--NCC:** SAROAD for air quality data.

Other systems used by Region V include systems used for water data analysis and for meeting the regions reporting requirements for water quality, water supply, pesticides, and air pollution. Several small systems used for administrative support are also maintained.

Figure 3-35. Region 5 - Chicago
Current Workload



F. EPA Region VI Office

Region VI, headquartered in Dallas, is responsible for administering EPA's programs in Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

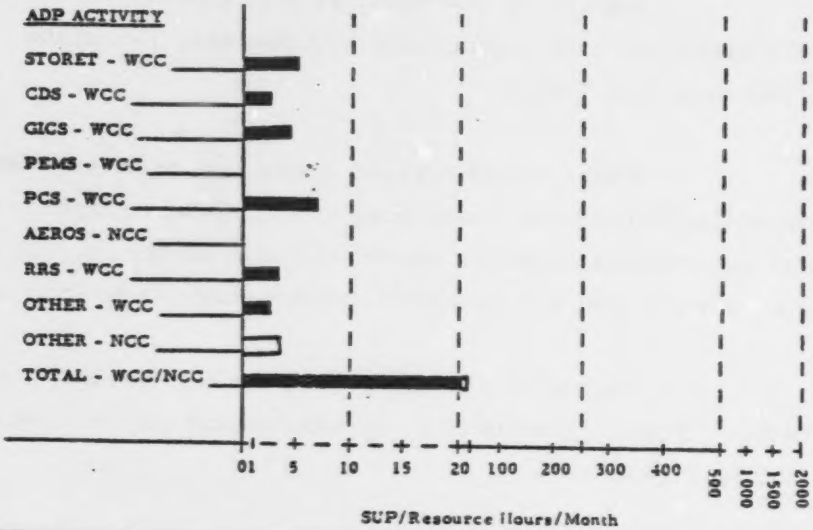
These states (except Louisiana) currently use STORET to maintain information concerning their primary monitoring network and information on water quality in these locations. GICS is used by the states to track progress of construction grant applications.

Region VI currently uses the timesharing systems described below. These systems are represented for current year (1977) workload in Figure 3-36.

- National Systems--WCC: CDS (Compliance Data System), PCS (Permits Compliance System), GICS (Grants Information and Control System), PEMS (Pesticides Enforcement Management System), and STORET (Storage and Retrieval of water quality data).
- National Systems--NCC: NEDS (National Emissions Data System), SAROAD (Storage and Retrieval of Aerometric Data).

Other ADP activities include systems used for water data collection and for meeting the region's reporting requirements for water quality, water supply, pesticides, and air pollution. Several small systems used for administrative support are also maintained.

Figure 3-36. Region 6 - Dallas
Current Workload



G. EPA Region VII Office

Region VII, headquartered in Kansas City administers EPA's programs in Iowa, Kansas, Missouri, and Nebraska.

These states currently use STORET to support monitoring of water quality trends on all major streams and to meet reporting requirements under the Federal Water Pollution Control Act.

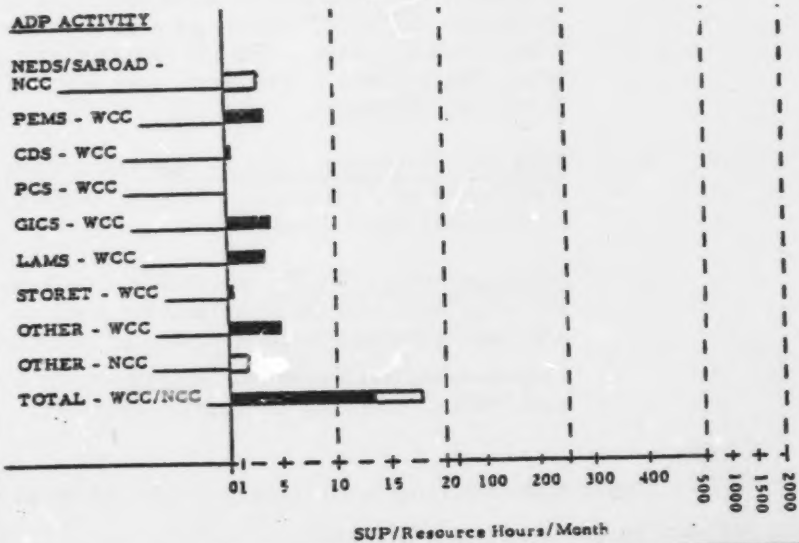
The ADP timesharing systems used by Region VII are described below and are represented for current year (1977) workload in Figure 3-37.

- o National Systems--WCC: PEMS (Pesticides Enforcement Management System), CDS (Compliance Data System), PCS (Permits Compliance System), GICS (Grants Information and Control System), and STORET (Storage and Retrieval of water quality data).

- National Systems--NCC: NEDS (National Emissions Data System), SAROAD (Storage and Retrieval of Aerometric Data).
- LAMS (Laboratory Management System): provides an interface with STORET--gathers data, edits, performs quality control, and produces reports.

Other ADP activities include systems used for meeting the regions requirements for water quality control, water supply, pesticides, and air pollution. Several small systems used for administrative support are also maintained.

Figure 3-37. Region 7 - Kansas City
Current Workload



H. EPA Region VIII Office

Region VIII, headquartered in Denver, administers EPA's programs in Colorado, Montana, North Dakota, South Dakota, Wyoming, and Utah.

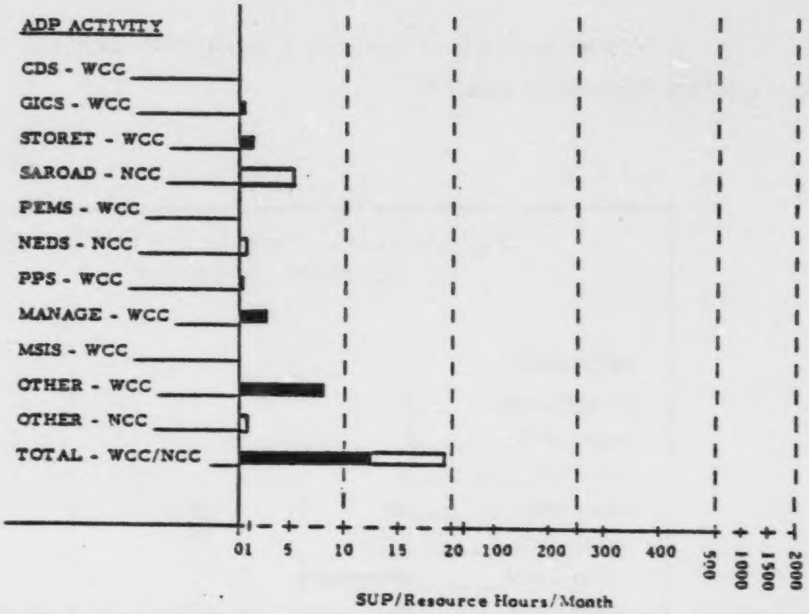
With the exception of Wyoming and Utah, these states use STORET to support the water pollution abatement and control programs defined under the Federal Water Pollution Control Act.

The ADP timesharing systems used by Region VIII are described below and are represented for current year (1977) workload in Figure 3-38.

- National Systems - WCC: CDS (Compliance Data System), GICS (Grants Information and Control System), STORET (Storage and Retrieval of water quality data), PEMS (Pesticides Enforcement Management System), and PPS (Personal Property System).
- National Systems - NCC: SAROAD (Storage and Retrieval of Aerometric Data). NEDS (National Emissions Data System).
- Management - WCC: provides computer support for regional administration, as well as use of national administrative systems such as TSSMS (Time-Sharing Services Management System) and PPS (Personal Property System).

Other timesharing activities provide general administrative support to the Regional Office.

Figure 3-38. Region 8 - Denver
Current Workload



I. EPA Region IX Office

Region IX, headquartered in San Francisco, administers EPA's programs in Arizona, California, Nevada, and Hawaii.

These states (excepting Nevada and Hawaii) currently use only STORET for supporting sections 208, 303(e) and 305(b) reporting requirements of the Federal Water Pollution Control Act.

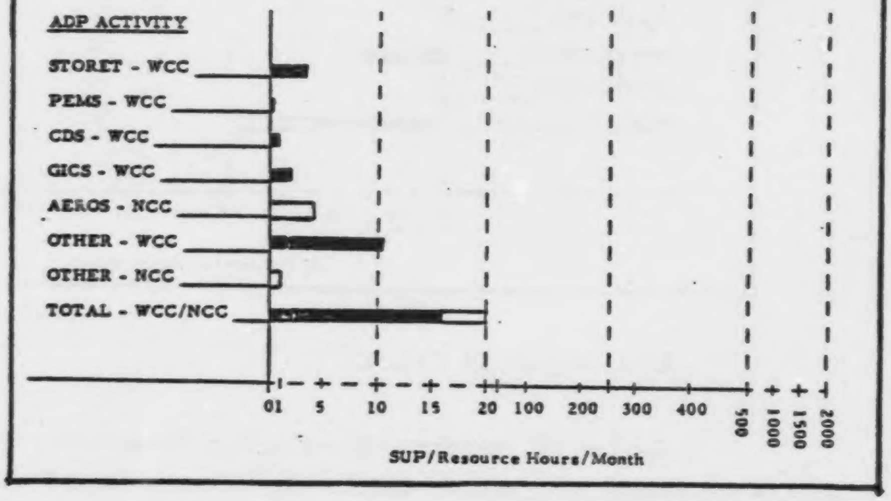
The ADP timesharing systems used by Region IX are described below and are represented for current year (1977) workload in Figure 3-39.

- National Systems - WCC: STORET (Storage and retrieval of water quality data). PEMS (Pesticides Enforcement Management System), CDS (Compliance Data System), and GICS (Grants Information and Control System).

- o **National Systems** - NCC: SAROAD for air quality data.

Other activities include a document control system and an air quality modeling system.

Figure 3-39. Region 9 - San Francisco
Current Workload



J. EPA Region X Office

Region X, headquartered in Seattle, is responsible for administering EPA's programs in Alaska, Idaho, Oregon, and Washington.

The only EPA data system used by these states is STORET. Idaho, Oregon and Washington currently use STORET and Alaska will begin using it in 1978.

Region X currently uses a mini-computer (PDP 11/70) for preprocessing of input data, administrative support, and for water quality monitoring and data processing.

The ADP timesharing systems used by Region X are described below and are represented for current year workload (1977) in Figure 3-40.

- National Systems - WCC: STORET (Storage and retrieval of water quality data), GICS (Grants Information and Control System), CDS (Compliance Data System), and PCS (Permit Compliance System).
- National Systems - NCC: SAROAD (Storage and Retrieval of Aerometric Data).
- RXSWIRS (Region Ten Solid Waste Information Retrieval System) - WCC: provides an inventory of disposal sites within Region X and descriptive information of these sites.
- Water Quality Modeling - WCC: provides modeling and analysis of water quality data.
- Regional Management System - WCC: provides tracking and reporting of the region's accounting activities.

Other ADP activities include systems used for water data collection and for meeting the region's reporting requirements for water quality, water supply, pesticides, and air pollution. A number of small systems used for administrative support are also maintained.

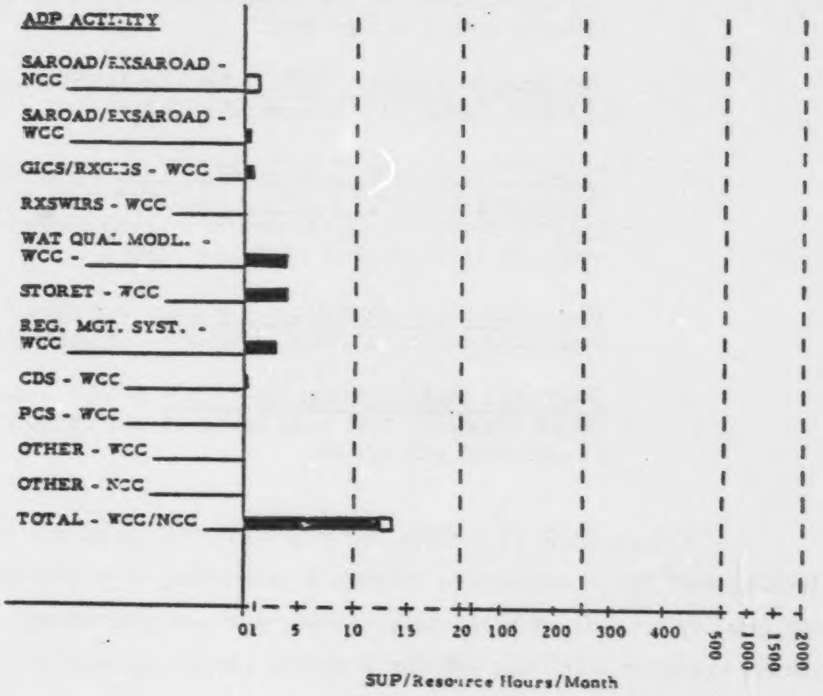


Figure 3-40. Region 10 - Seattle Current Workload

SECTION 4

PROJECTED ADP WORKLOAD

4.1 INTRODUCTION AND SCOPE

This section presents the projected computer workload for 1979, 1981, 1985, and 1990 time frames. Each ADP activity that is expected by EPA management to continue during this period is included plus those new activities scheduled for implementation. Termination of those activities with life cycle end dates during the period through 1990 have also been factored into the projections. Changes in missions, programs, and ADP activities caused by legislation and evolvement of regional and state operations are analyzed by way of describing the forces behind projected ADP growth rates. Each major ADP activity and the changes each will experience is related to parallel changes in AA and DAA programs, regional offices, and staff offices. Graphs are included to present projected workload growth for EPA in total and each agency office. Graphs also include the different rates of growth projected for each of the three future scenarios. Projected ADP costs for each AA office and total EPA are addressed in Section 4.5.

4.2 ALTERNATIVE SCENARIOS

Projected growth rates are presented at three levels which coincide with the three future scenarios discussed in management level interviews during the ADP survey:

- Scenario I is considered to be equivalent to today's level of activity and growth within the agency, and includes the viewpoint of the present administration, current economic outlook, energy programs, and public demands for environmental safeguards.

- Scenario II considers that conditions of Scenario I will be augmented by increased public demand and legislative actions for environmental safeguards, potentially caused by increased public awareness of environmental problems and some pollutant or toxic substance disasters of national prominence and magnitude.
- Scenario III considers the situation where shortage of critical resources such as energy, food, or water would impact agency programs with potential secondary concerns for the environment and high priorities for production of life-support resources.

Discussions at the AA and DAA level focused on these three scenarios in terms of overall agency impact and effect on individual programs and ADP budgets. Management viewpoints and predictions were quantified and applied to the growth rates of individual ADP activities. After EPA review of the projection values, workload growth rates were finalized and computer processed, resulting in the three levels of future ADP growth presented in this section. Growth rates for each scenario by EPA office are listed in their quantified form in "Projections of EPA Future", Volume III, Appendix to Consolidated Systems Study. Detailed projections by ADP activity are available in a special report provided to MIDSD.

4.3 WORKLOAD FACTOR DEFINITIONS

Computer workload for projected future periods through 1990 is expressed in the same values used for the current workload in Section 3, i.e., in "SUP hours" per month for NCC operations and in "resource hours" per month for WCC (COMNET) operations. These workload values are based upon hardware and software capabilities in existence today and provide a means by which prospective vendors can measure the future ADP requirements in terms of today's known computing values. Future workload has been computed for the milestone years 1979, 1981, 1985, and 1990. This was performed in accord with the management level survey estimates that were quantified and used for projecting changes in total agency growth, program and mission levels, and changes in the rate of ADP utilization for each office.

4.4 MISSION AND WORKLOAD ANALYSIS FOR PROJECTED ADP UTILIZATION

The following subsections define those ADP activities and associated programs which will undergo changes affecting future ADP workload, either up or downward. Total EPA workload for future periods is presented first with each AA and DAA level office following. Staff and regional offices are covered in the same format. Graphs are included showing projected ADP workload by office and by ADP activity for WCC and NCC computer facilities. For purposes of projecting workload, it was assumed that ADP activities would remain on their current or planned computer facility, i.e., WCC (COMNET) or NCC, for the projected period through 1990.

4.4.1 Total EPA

Agency ADP growth over the projected period through 1990 is estimated to be continuing at a relatively high rate through 1979 and then at a more reduced rate through the remainder of the projected period under Scenario I (see Figure 4-1). Increases in the period up to 1979 are caused by implementation of new programs in the Office of Enforcement (toxics in water and pesticides programs, water supply), Office of Water and Hazardous Materials (solid waste), Office of Research and Development (solid waste, toxics, energy), and regional offices (toxics, solid waste, water supply). Recent legislation which impacts these programs and causes ADP growth include the Safe Drinking Water Act of 1974, the Resource Conservation and Recovery Act of 1976, and the Toxic Substances Control Act of 1976.

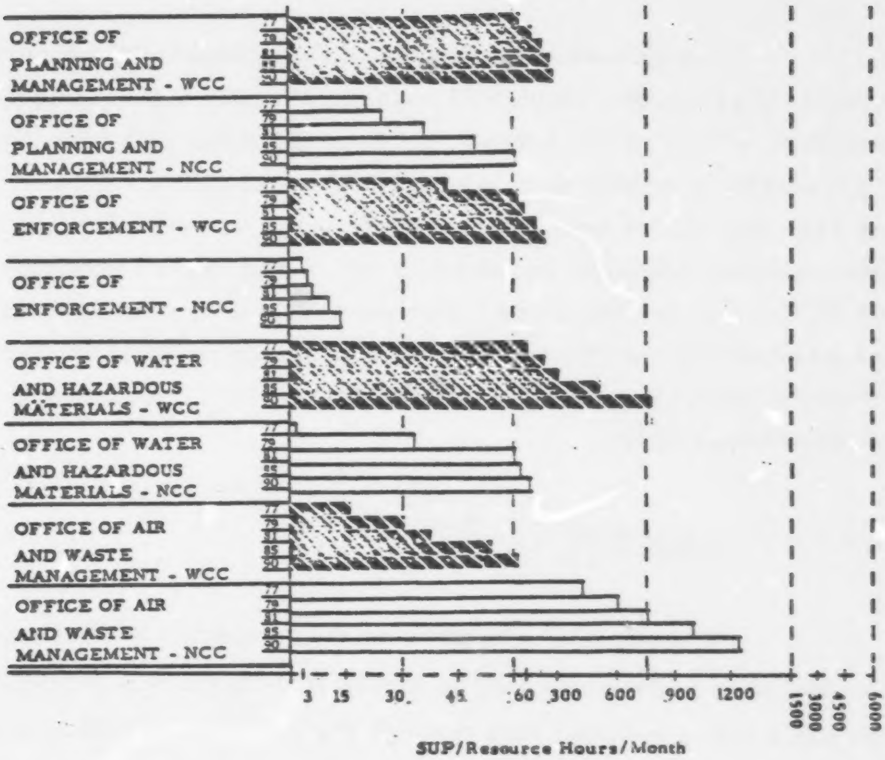


Figure 4-1. Workload by Organization
Scenario 1

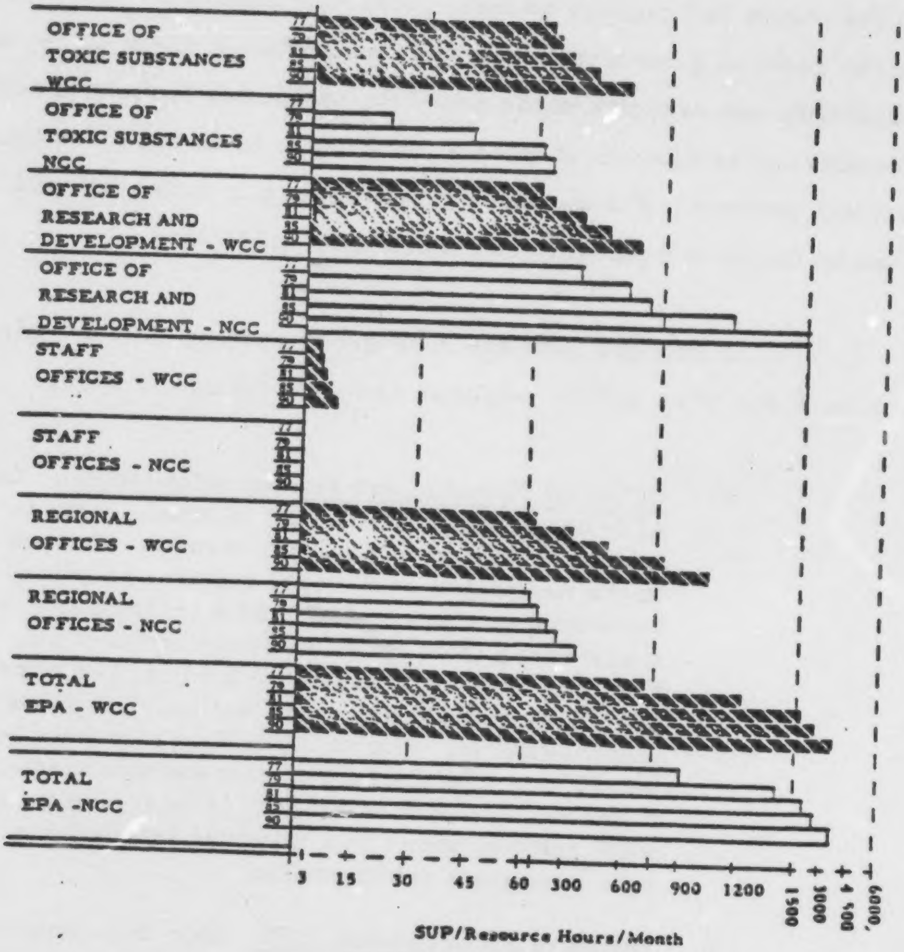


Figure 4-1. Workload by Organization
Scenario 1

As these and other existing programs mature in the period beyond 1979, ADP utilization is expected to grow at a more reduced rate. Some of the ADP workload for current air and water programs will shift to the states and regions as their local ADP capability increases. Some of the reduced growth trends in programs will be offset by increased capability and capacity in the new EPA computing facility(s) and higher demand and utilization of national data bases in an expanded telecommunications network. Future new legislation (e.g., radiation) will be a continuing factor in program growth and ADP utilization.

A discussion of the ADP growth patterns (under all scenarios) for each AA ofice and the regional and staff offices follows.

- Office of Planning and Management (OPM). Growth in ADP usage under Scenario I is small, with no new activities or major program thrusts. Growth is higher in the near term as several existing activities for personnel are integrated, and a major activity is transferred from HEW facilities to the WCC. After this developmental period, ADP usage is expected to grow less rapidly due to reduction of duplication in these systems. Scenario II (higher activity levels) would increase the rate of system enhancement. Scenario III (reduced activity levels) would restrict ADP activity usage to a minimal level with a slower rate of system enhancement.

- Office of Enforcement (OE). New enforcement programs and increased permit complexity will cause OE usage of ADP to grow slightly more than the agency in total, particularly from now until 1979. Programs for toxics, solid waste, and water enforcement are the strongest growth areas in the short-term. ADP tracking systems will continue to be important as the permitting process covers additional pollutants and regulations become more complex. Under Scenario II, toxics enforcement operations would expand more. Scenario III would cause some cutbacks although ADP would not be curtailed as greatly as personnel levels.

- Office of Water and Hazardous Materials (OWHM). Growth in ADP usage under Scenario I is projected to be similar to the agency in total, with a higher rate of increase in the near term due to the impact of the toxics program on water programs, new solid waste programs and new water supply systems. Scenario II would increase the rate of toxics program implementation and workload. Scenario III would curtail activities in local assistance, training and grants.

- Office of Air and Waste Management (OAWM). Air-related programs at NCC show an initial ADP usage growth for air quality guidelines development, then possibly a more reduced rate of growth if data handling operations can be transferred to states and regions. Scenario II would cause increases in all program areas, while Scenario III would cause curtailments in many of the research and local assistance areas.

- Office of Toxic Substances (OTS). Under Scenario I, ADP usage is projected at a relatively high rate due to the activities required by the Toxic Substances Control Act. Scenario II (higher activity) levels would cause a generally higher rate of program implementation and associated ADP activity. Scenario III and reduced activity levels would slow the rate of implementation but would not eliminate any activity areas.

- Office of Research and Development (ORD). Steady growth in ADP usage is projected for ORD as quality control functions and new programs for solid waste, toxics and energy are implemented. ORD management has projected increased ADP support for data analysis and modeling activities and more use of distributed processing functions at the laboratory level. Scenario II would cause acceleration in solid waste and toxics research areas. Scenario III would cause lower priority programs and associated ADP utilization levels to be restricted.

- Staff Offices. Relatively few ADP activities are projected for staff offices and growth rates are less than the agency in total. Some limited growth will occur as existing programs for NEPA compliance and Public Affairs expand. The Office of International Activities is planning to utilize ADP for some of their management functions.

- Regional Offices. ADP time-sharing growth in the regions is higher in the early period up to 1981, then reduces as more functions are decentralized to the states. Overall ADP workload will steadily increase, however, as regions utilize more local distributed processing capability in air, water and other programs for data collection and analysis. Scenario II and higher activity levels would increase data collection and analysis levels in air, toxics and water programs. Secnario III (reduced activity levels) would cause restrictions in development of new administrative support systems, with less impact on ADP activities for national systems such as GICS, STORET, SAROAD, etc.

The following subsections present a more detailed description of ADP growth trends by scenario in program areas for DAA level offices, regional offices, and laboratories within each major AA area. The charts in Figures 4-1, 4-2, 4-3 show the projected ADP workload for each scenario by AA level office for WCC and NCC facilities.

4.4.2 Office of Planning and Management (OPM)

Growth in ADP usage for OPM under Scenario I is of a limited nature, as shown in Figure 4-4. Almost no new activities or major thrusts are foreseen. Growth is slightly accelerated in the near time frame based on development activities associated with integrating several activities, and increased use of in-house capabilities by the Office of Planning and Evaluation (OPE) and the transfer of the Financial Management System from HEW facilities to the WCC. After this period, a lower growth rate will be maintained to allow increased usage of existing activites and minor enhancements.

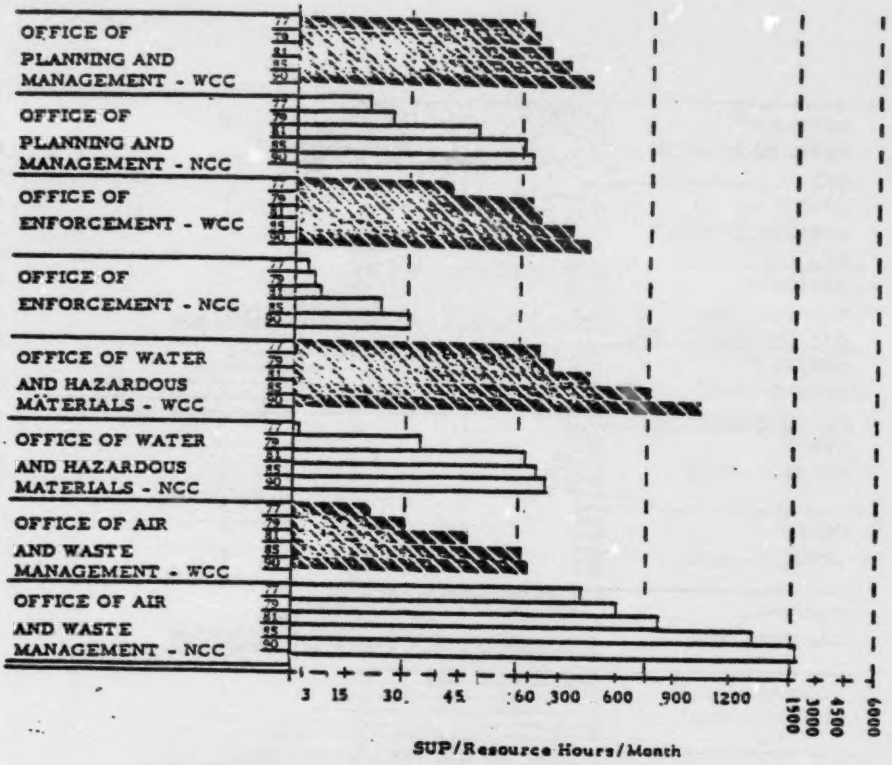


Figure 4-2. Workload by Organization (AA)
Scenario 2

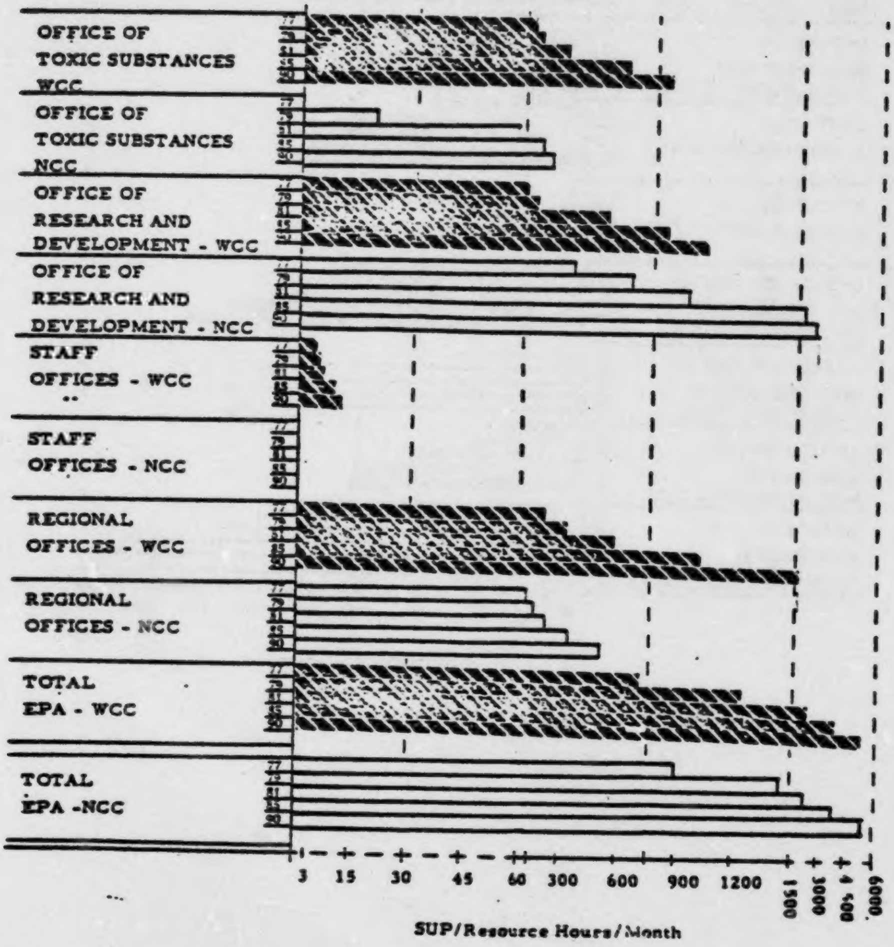


Figure 4-2. Workload by Organization (AA)
Scenario 2

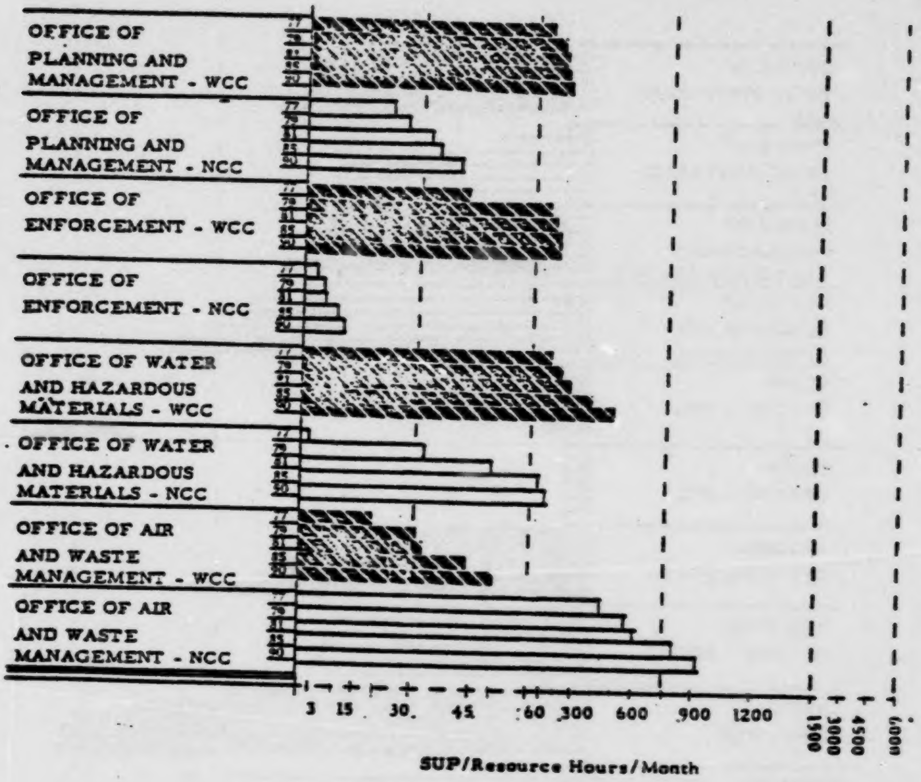


Figure 4-3. Workload by Organization (AA)
Scenario 3

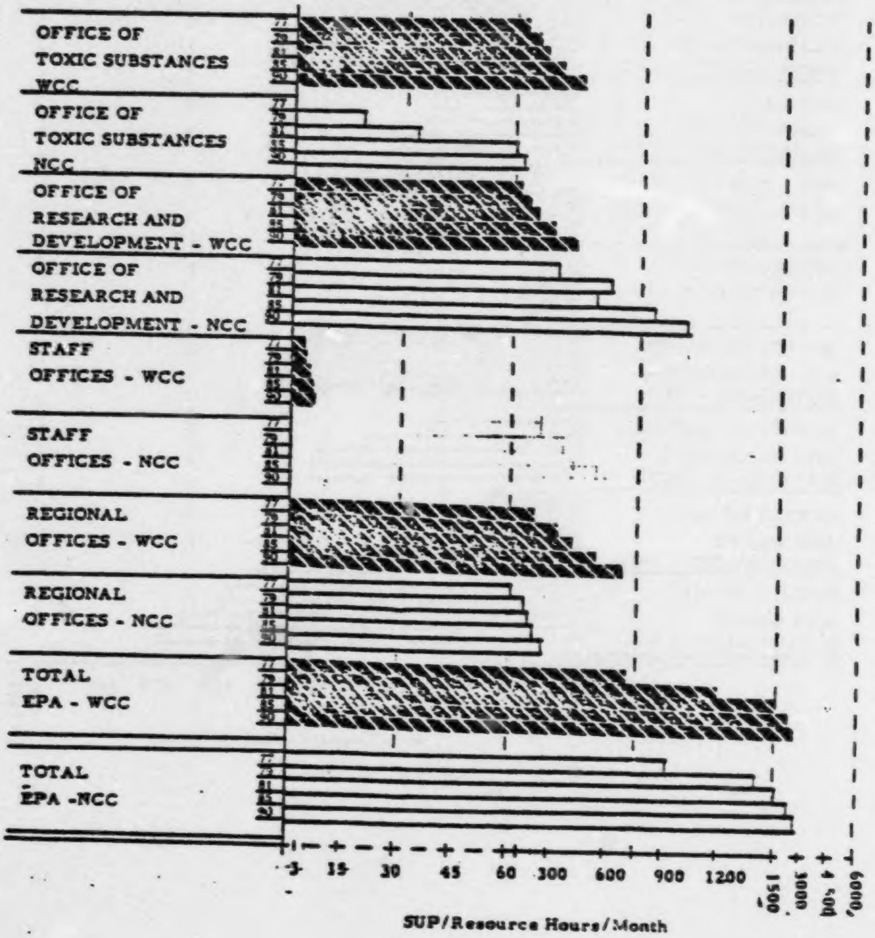


Figure 4-3. Workload by Organization (AA)
Scenario 3

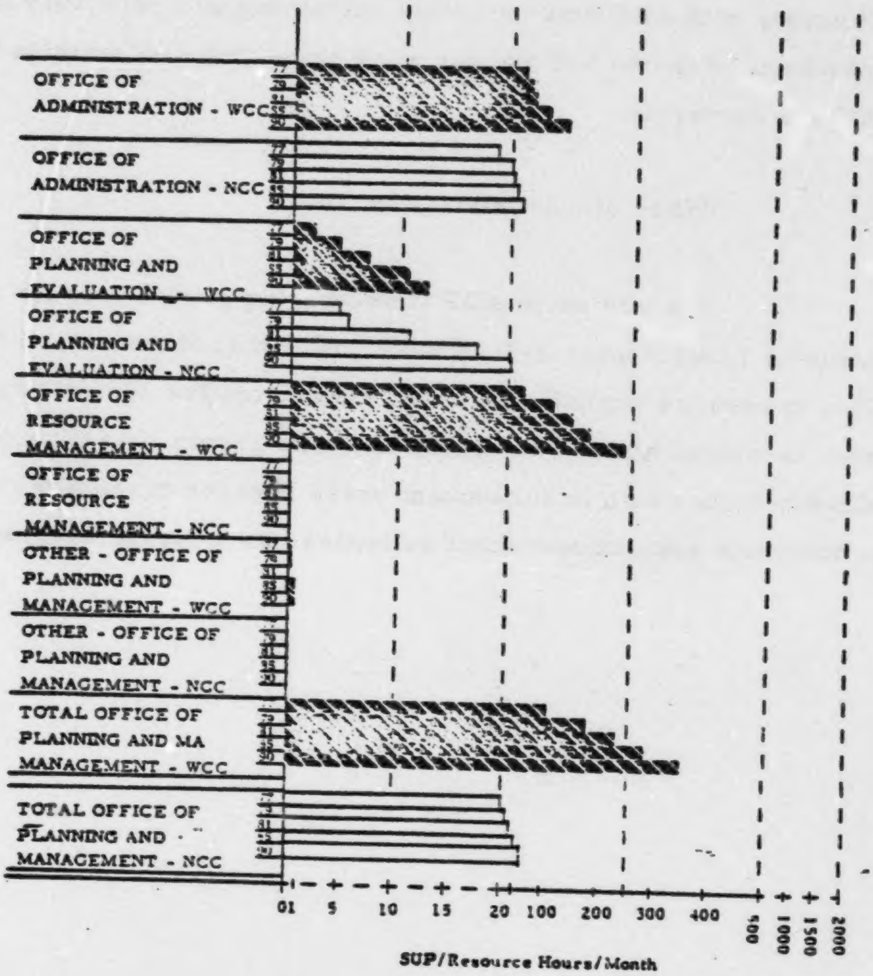


Figure 4-4. Office of Planning and Management Projected Workload Scenario 1

Scenario II (higher demand), would allow increased enhancements to activities while Scenario III (reduced demand) is a status quo situation, with ADP activity levels remaining at a relatively low level of operation. Figures 4-5 and 4-6 show projected ADP workload for each of these scenarios.

A. Office of Administration (OA)

The projected ADP time-sharing growth rate for OA under Scenario I (see Figure 4-7) is much lower than the overall EPA rate. This is because virtually all of the administrative systems required have been developed and are in operation. The growth rate through 1981 is slightly higher than in subsequent years because of management plans to integrate several personnel activities into a single integrated system.

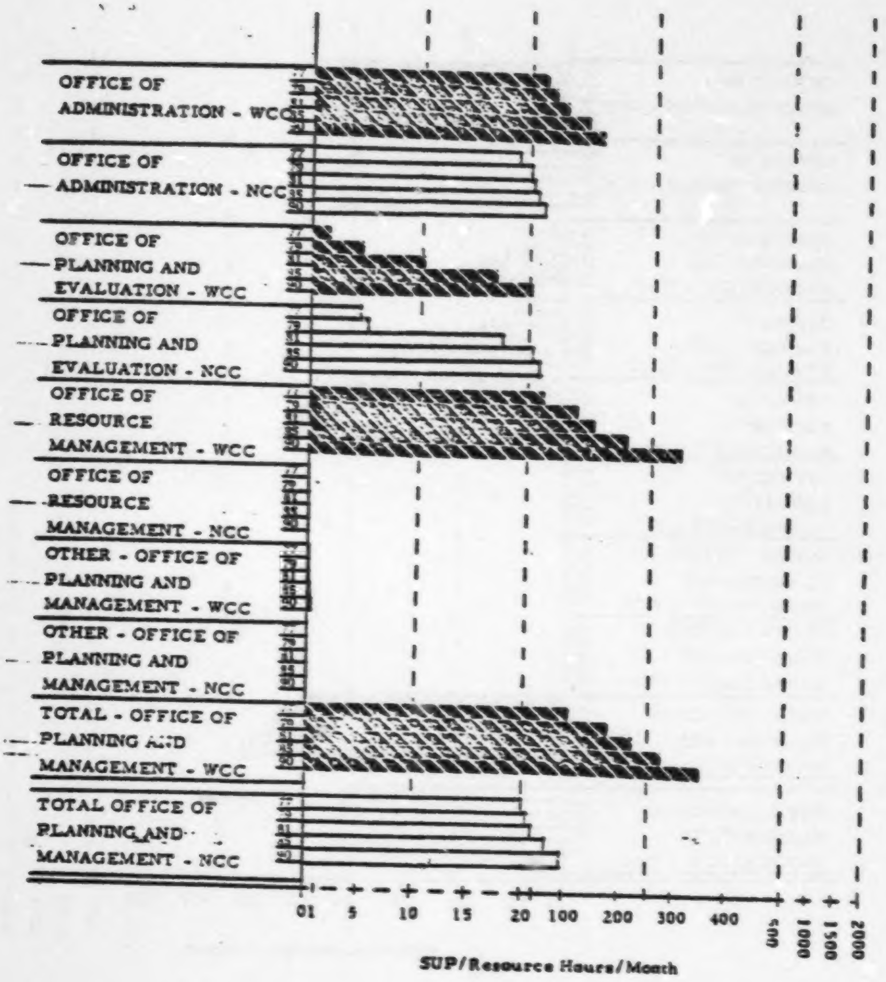


Figure 4-5. Office of Planning and Management Projected Workload Scenario 2

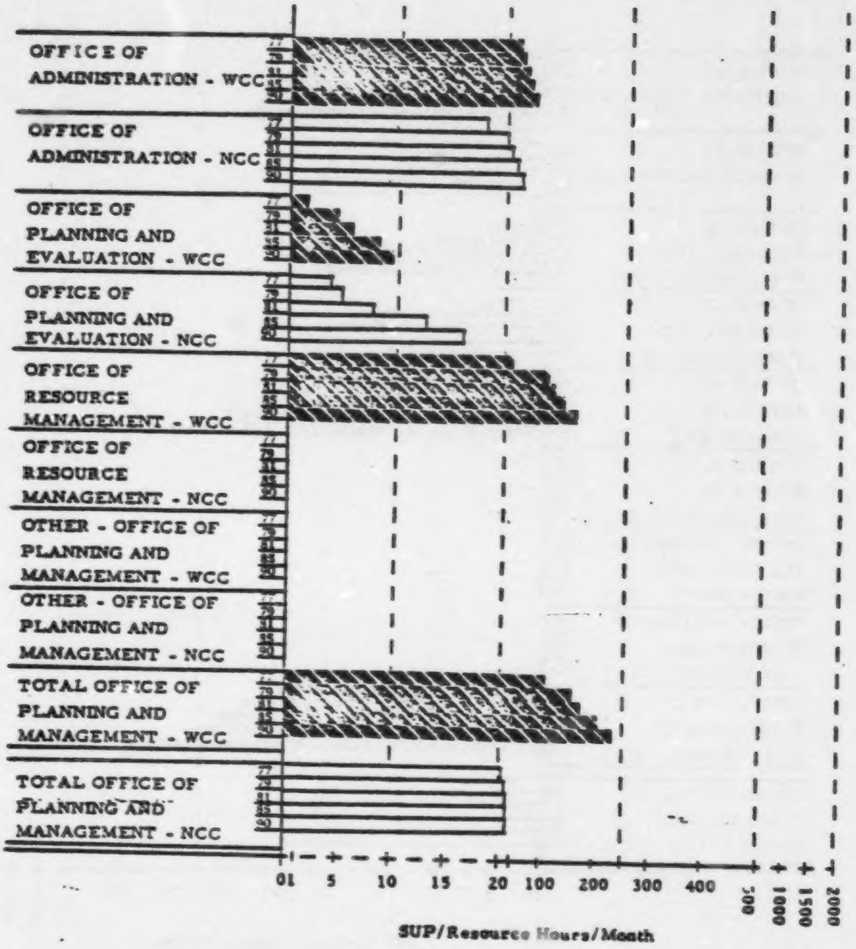


Figure 4-6. Office of Planning and Management Projected Workload Scenario 3

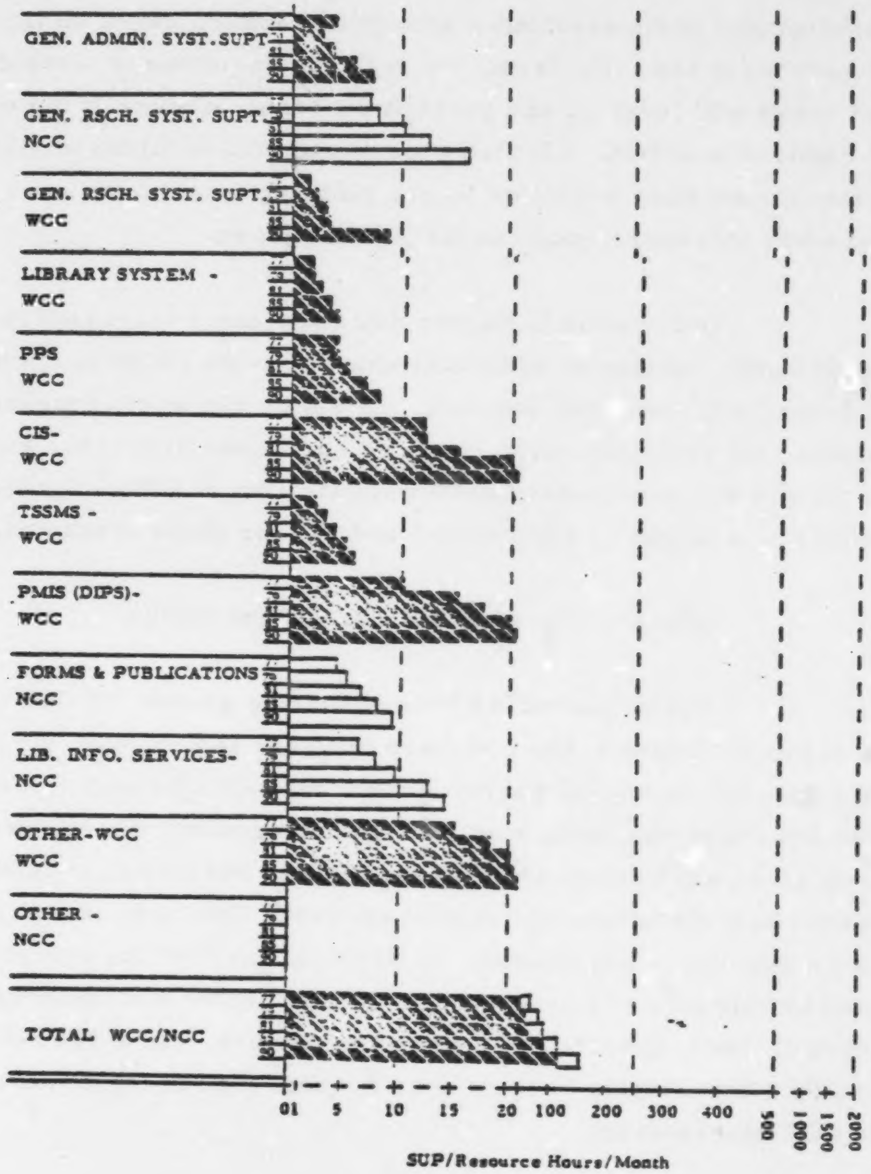


Figure 4-7. Office of Administration Projected Workload Scenario 1

Development costs associated with this operation cause an increased rate of growth for the short term, but once the operation is completed, costs and usage will level off and perhaps decrease because of the elimination of duplicative effort. Limited growth will still continue to allow enhancements for existing activities (e.g., planning function included in TSSMS) and some increased usage as the Agency grows.

In Scenario II (higher demand), some increases in workload would occur because of additional enhancements added to the activities. In Scenario III (reduced demand), the status quo would generally be maintained. No activities could easily be eliminated since they are all essential to the overall management and administration of EPA. Projected ADP workload is shown in Figures 4-8 and 4-9 for these scenarios.

B. Office of Planning and Evaluations (OPE)

The projected ADP time-sharing growth for OPE under Scenario I is shown in Figure 4-10. A sharp increase is projected for the period through 1981 with a subsequent growth rate similar to the overall EPA rate. One topic that was reiterated by EPA management was the need to perform more analyses of existing and planned operations in terms of cost/benefit considerations and impact studies. This area is the thrust of OPE so growth can be anticipated. In addition, most of the current ADP support used by this office is contractor supplied. Plans are underway to shift much of this support to EPA computer centers, and a 100%-200% increase in OPE time-sharing budgets over the next four to eight years is predicted by OPE management.

In Scenario II (higher demand), lower priority activities such as analysis of the impact of tax incentives on polluters and analysis of the impact of construction grants on land use and rural growth would become higher priority. In Scenario III (reduced demand), major priority activities would remain but there would be cuts in the scope and activity level of

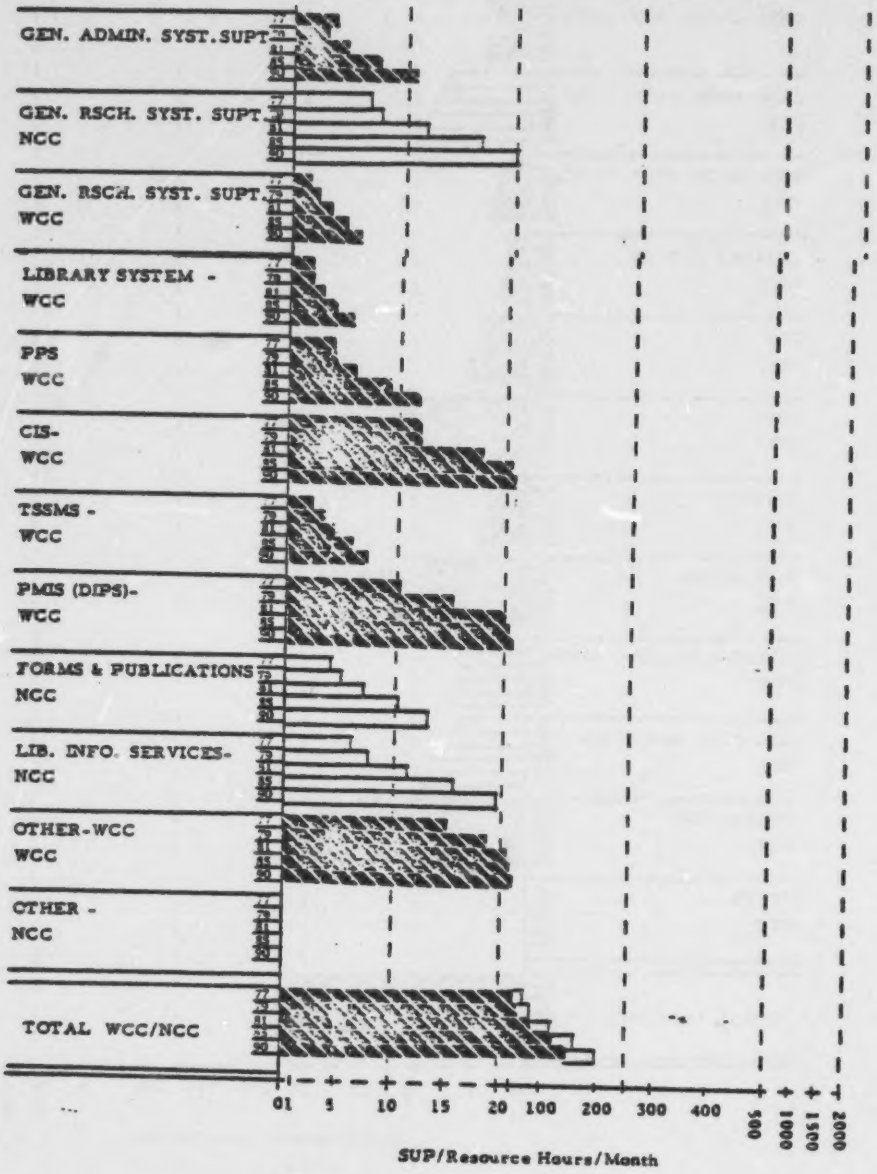


Figure 4-8. Office of Administration Projected Workload Scenario 2

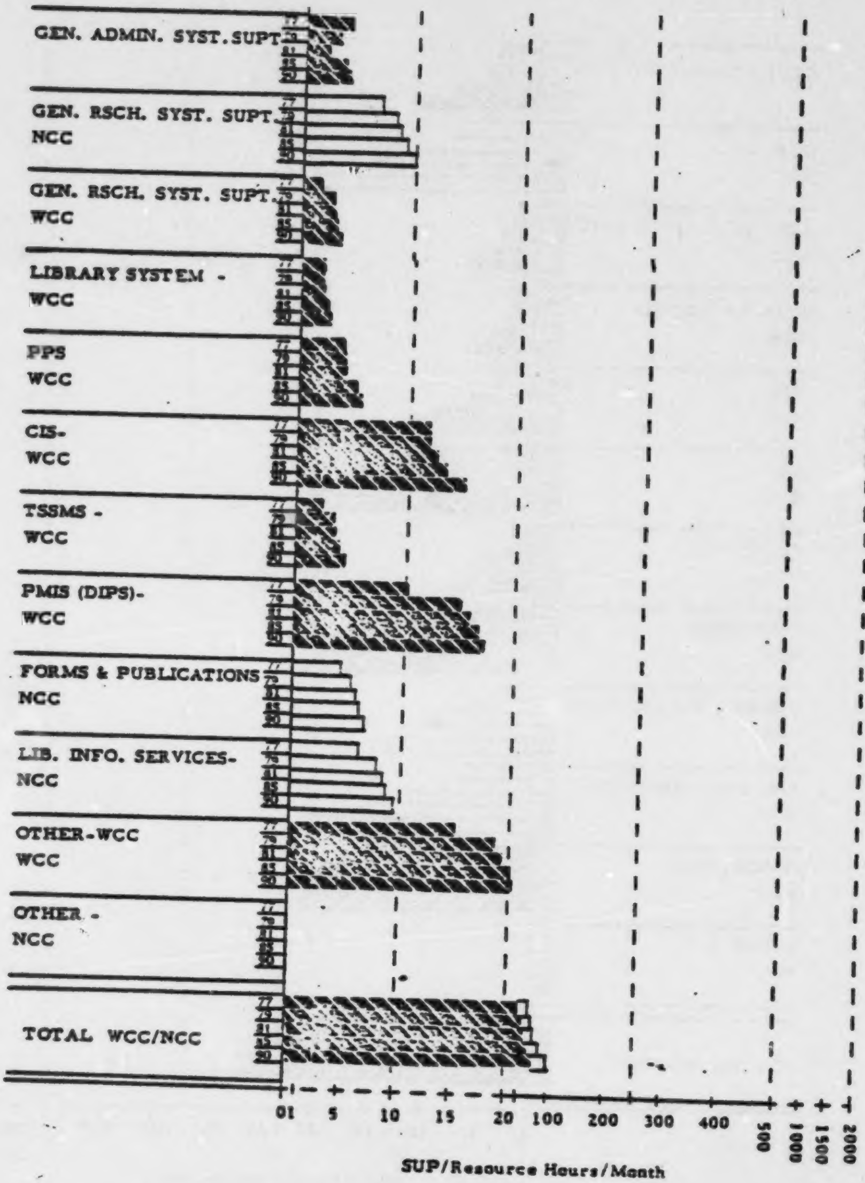


Figure 4-9. Office of Administration Projected Workload
Scenario 3

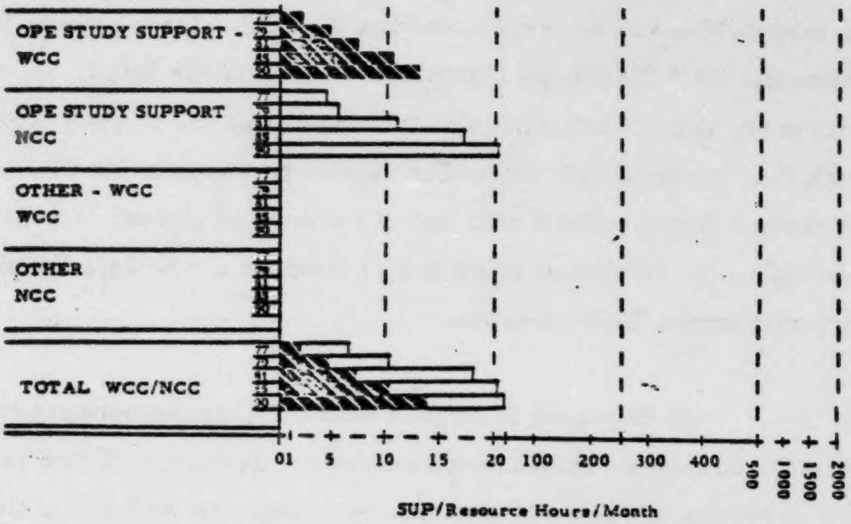


Figure 4-10. Office of Planning and Evaluation Projected Workload Scenario 1

projects. Figures 4-11 and 4-12 illustrate the projected ADP workload for these scenarios.

C. Office of Resource Management (ORM)

The projected ADP time-sharing growth rate for ORM under Scenario I is shown in Figure 4-13. The initial increase shown in 1979 is largely due to the transfer of the Financial Management System (FMS) from the HEW Parklawn Computer Center to the WCC. After this initial increase, the growth rate will be lower than the overall EPA rate. As with OA, virtually all activities needed to support the ORM function are in place. Some growth will occur because of growth in programs. For example, the initiation of grants in support of the Safe Drinking Water Act will cause GICS to grow.

In Scenario II (higher demand), enhancements to existing activities increase workload requirements. Scenario III and reduced demand for services is basically a status quo situation with little change in program activities. Figures 4-14 and 4-15 show the projected ADP workload for these scenarios.

4.4.3 Office of Enforcement (OE)

The Office of Enforcement is projected to have an ADP usage growth rate slightly higher than that of the entire agency under Scenario I (see Figure 4-16). Many EPA programs are now at the stage where regulations have been promulgated and enforcement is starting. An extremely high growth rate is envisioned over the next two years. This is necessitated by the initiation of ADP activities to support Toxics and Solid Waste enforcement, and plans to automate Discharge Monitoring Report review (water

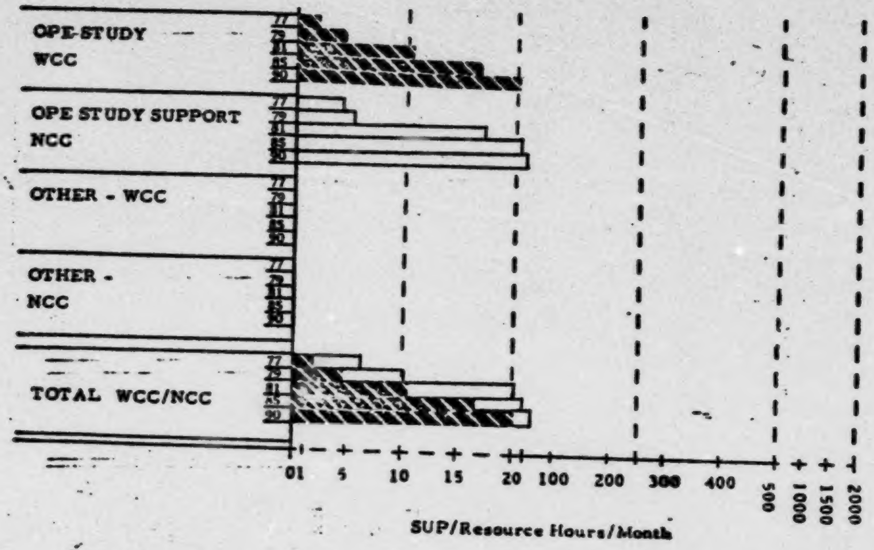


Figure 4-11. Office of Planning and Evaluation Projected Workload Scenario 2

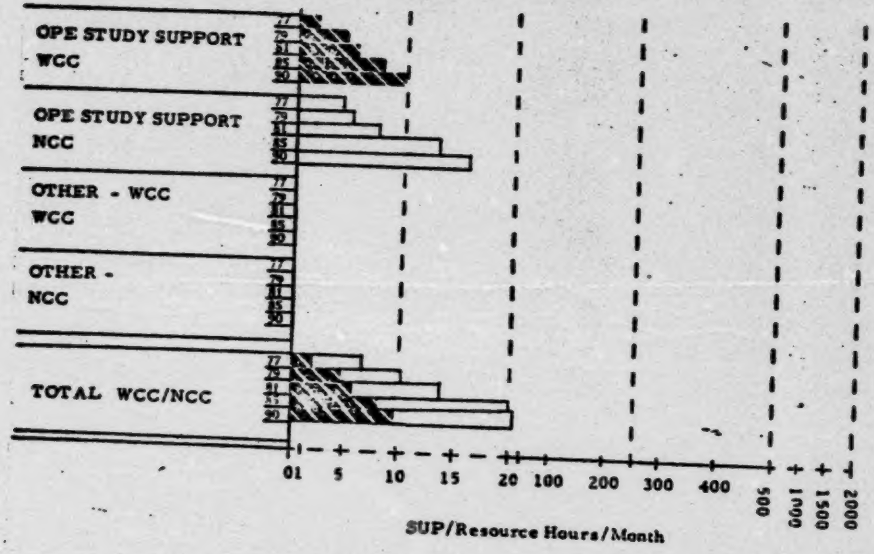


Figure 4-12. Office of Planning and Evaluation Projected Workload Scenario 3

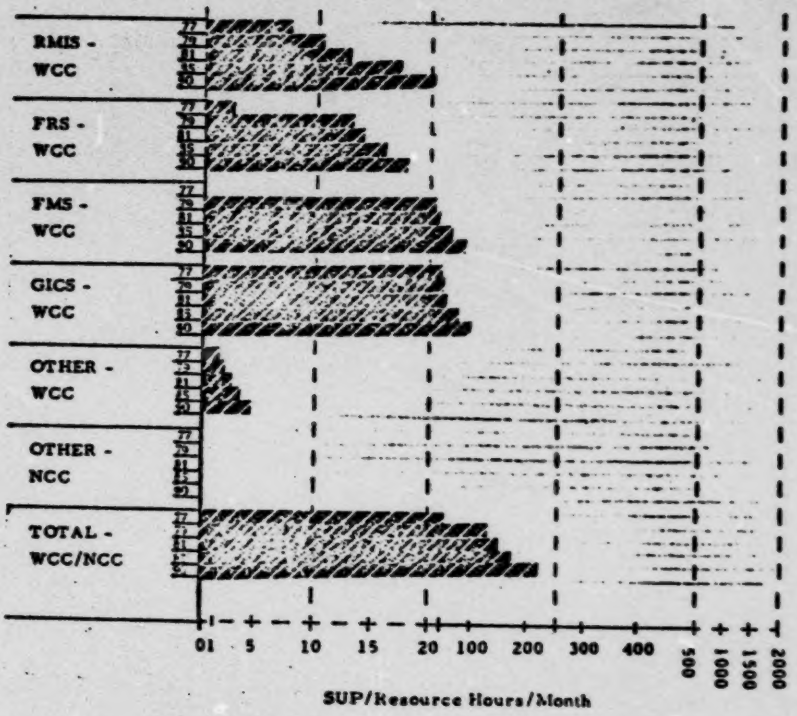


Figure 4-13. Office of Resources Management Projected Workload Scenario 1

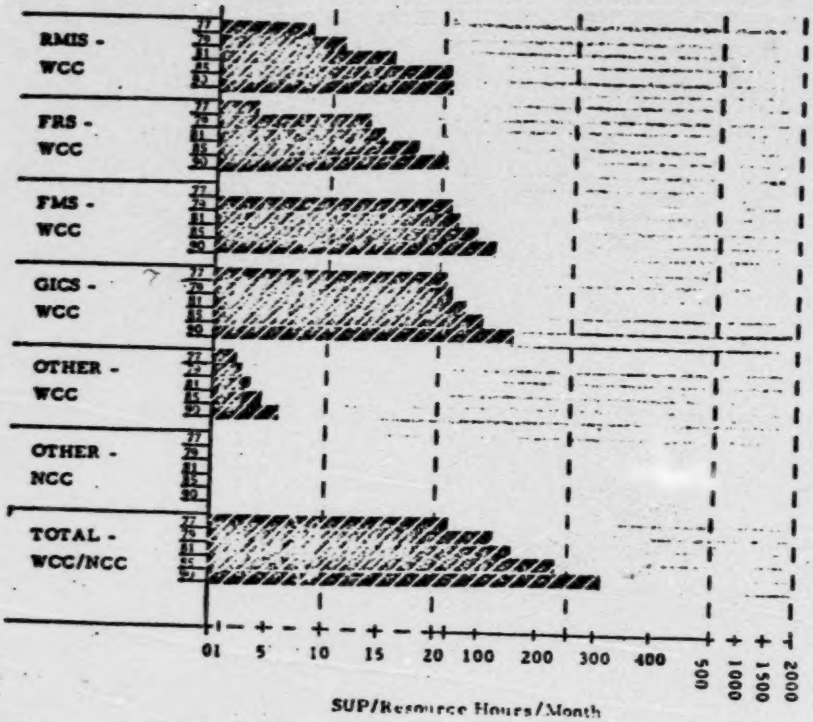


Figure 4-14. Office of Resources Management Projected Workload Scenario 2

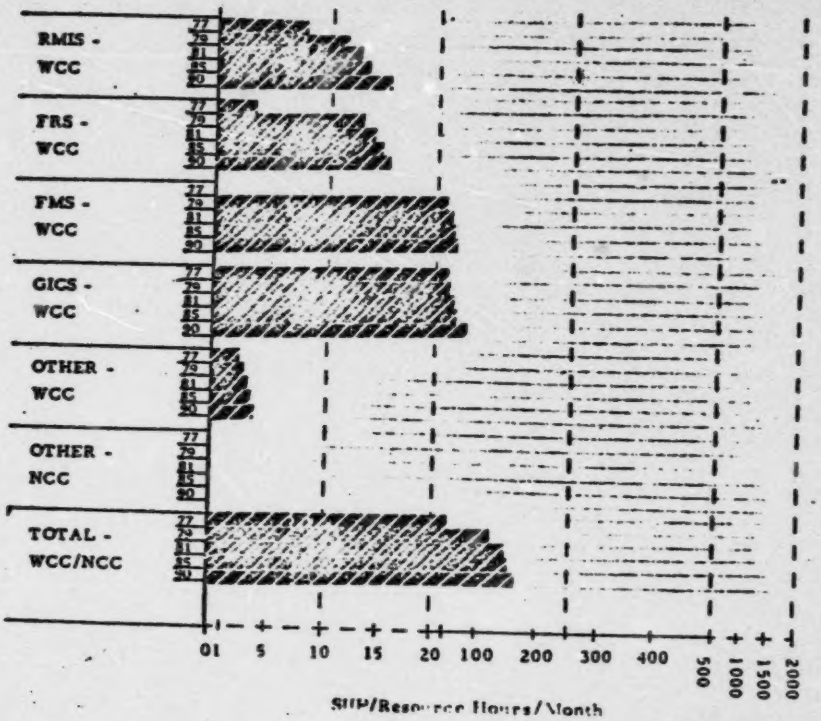


Figure 4-15. Office of Resources Management Projected Workload Scenario 3

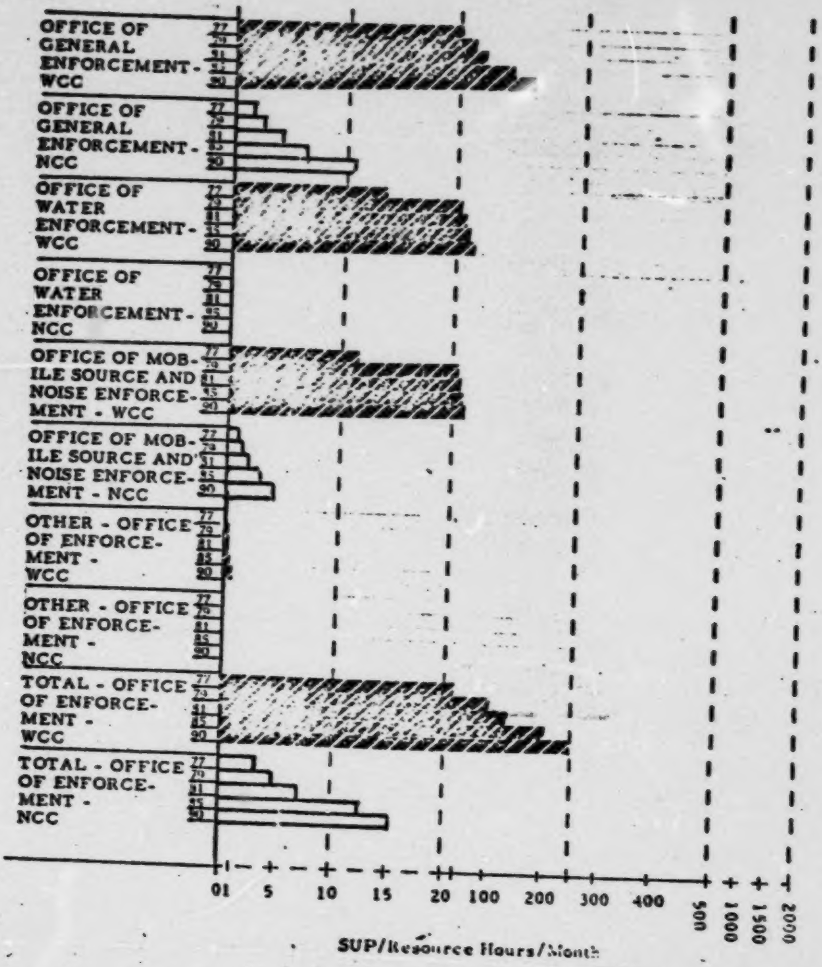


Figure 4-16. Office of Enforcement Projected Workload Scenario 1

enforcement). Over the long term, the increasing complexity of permits and additional pollutants covered by regulations will require the continued use of ADP tracking systems. ADP will also be important in integrating data from various sources so that better decisions can be made.

In Scenario II (higher demand), toxics enforcement will expand even more. Scenario III and reduced demand would result in across the board cutbacks with some managers predicting an emphasized need for ADP to compensate for personnel losses. Figures 4-17 and 4-18 present the anticipated ADP growth rates for these scenarios.

A. Office of General Enforcement (OGE)

The growth in ADP usage for this office under Scenario I (see Figure 4-19) is the highest for any Enforcement DAA and exceeds the overall EPA growth rate. The major reason for projected high growth is that this office is responsible for enforcement operations related to the highest demand EPA program areas, Toxics and Solid Waste. The exact nature of ADP activities supporting enforcement in these program areas is currently being defined but it has been estimated by OGE management that approximately $200,000 in time-sharing will be used in 1979 to support these areas. This usage has been included in the "Other" category in the chart. Additional growth in the short term will occur because of expansion of CDS to allow increased state usage and to provide coverage for more pollutants. The high rate of growth through 1979 will level off somewhat in the remaining years but continued expansion will be required to support the programs of this office. OGE management felt that the ratio of ADP budget to total budget will remain the same except in Toxics where ADP could be a significant component.

In Scenario II (higher demand), additional use would be made of ADP especially in support of Toxics enforcement. More support to states in using EPA developed systems would be provided. In Scenario III (reduced demand), activity would be trimmed for more traditional programs and emphasis would be placed on health risk areas. Figures 4-20 and 4-21 show the projected ADP workload for these scenarios.

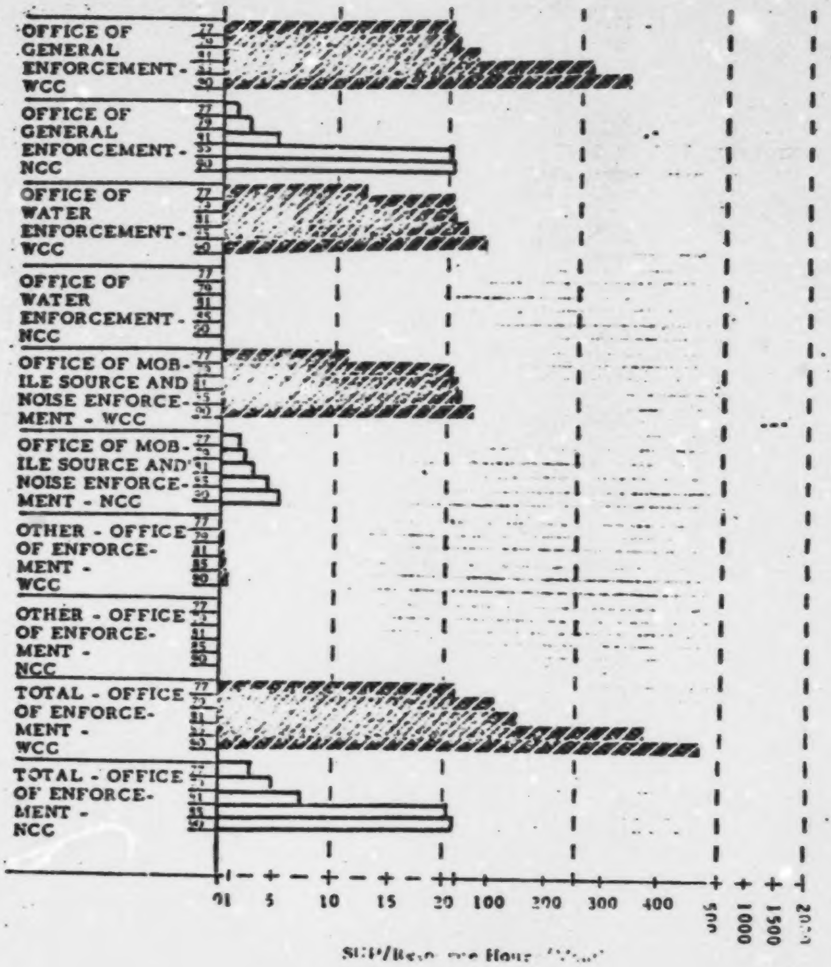


Figure 4-17. Office of Enforcement Projected Workload Scenario 2

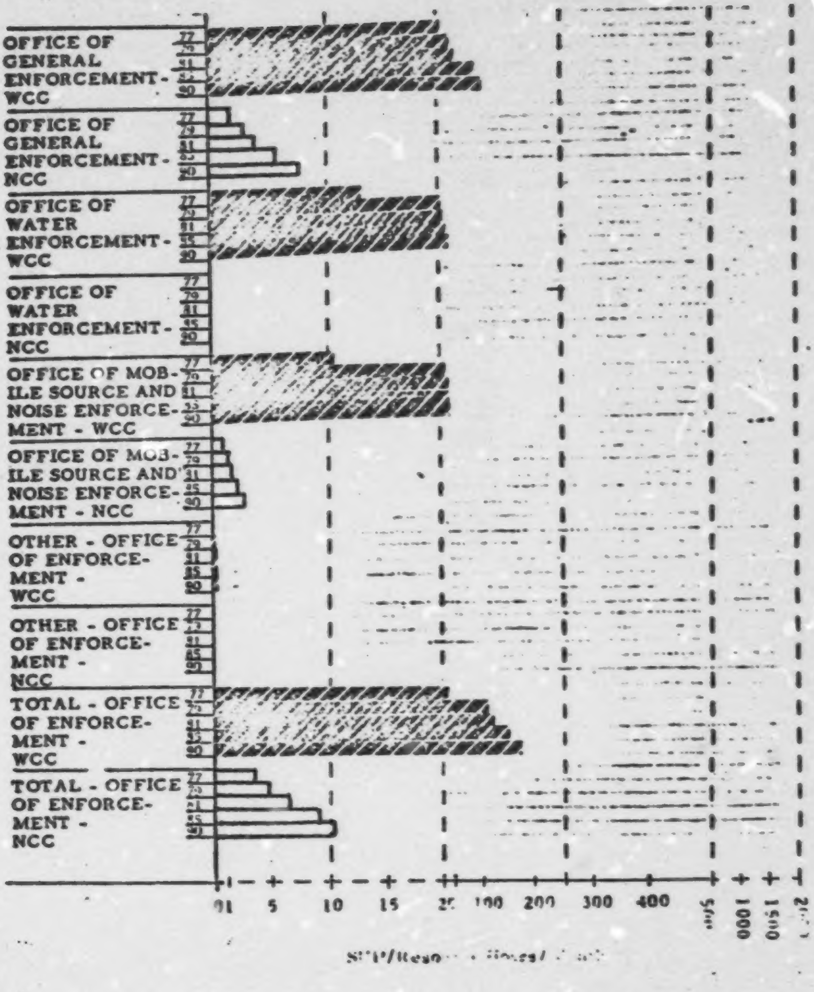


Figure 4-18. Office of Enforcement Projected Workload Scenario 3

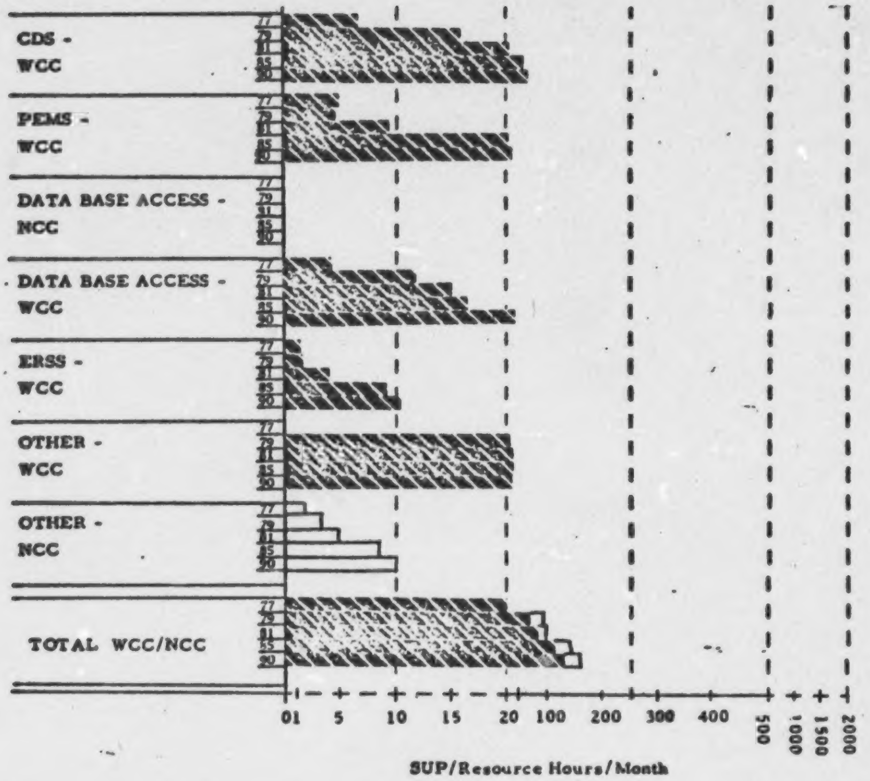


Figure 4-19. Office of General Enforcement Projected Workload Scenario 1

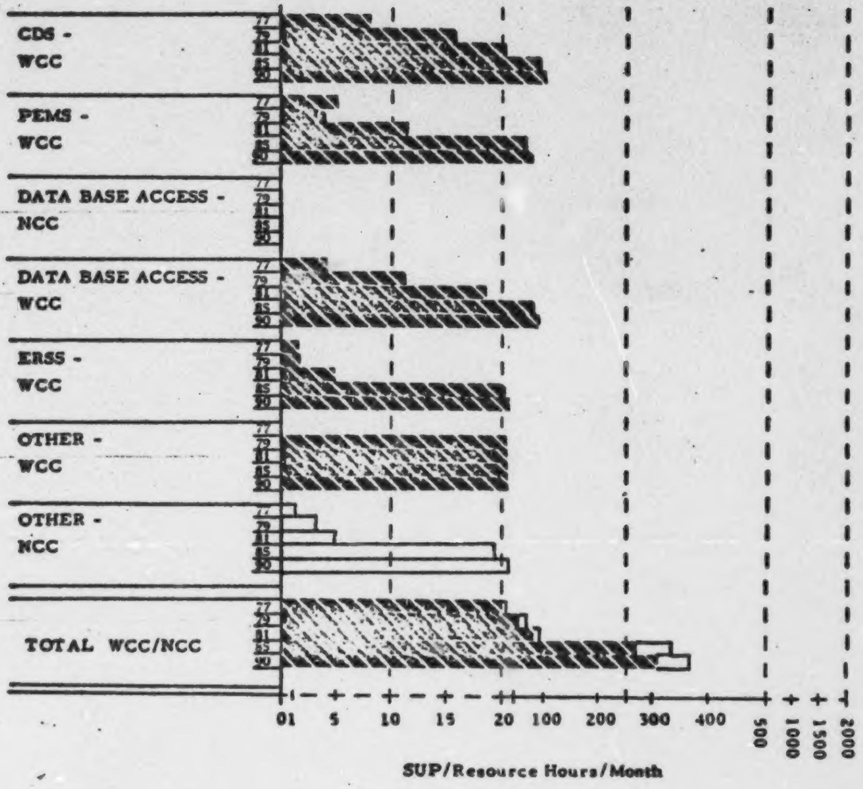


Figure 4-20. Office of General Enforcement Projected Workload Scenario 2

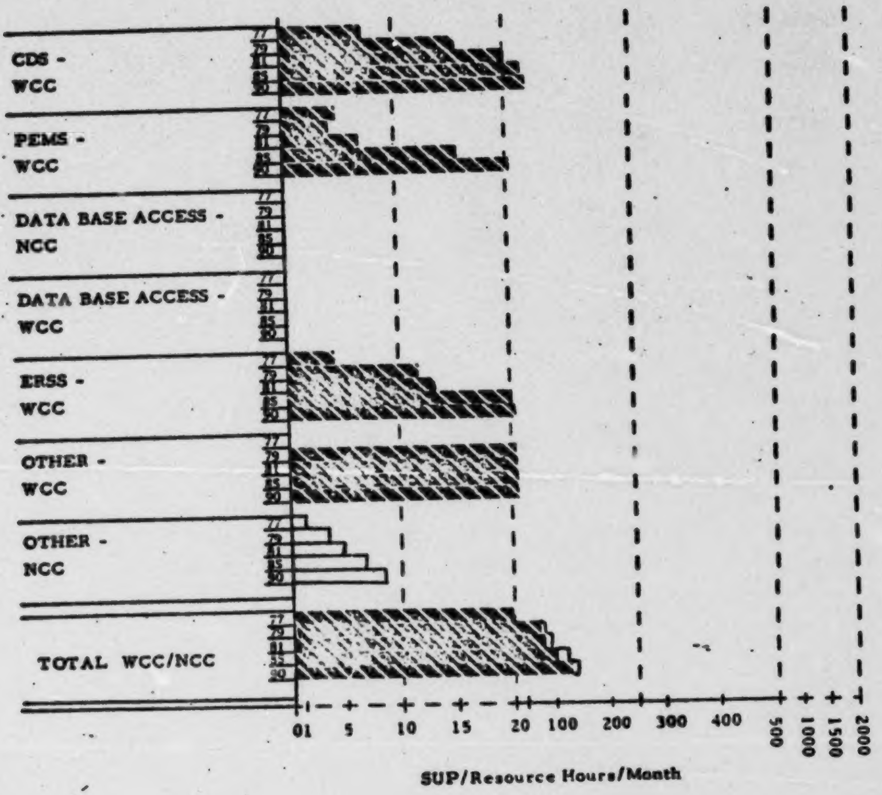


Figure 4-21. Office of General Enforcement Projected Workload Scenario 3

B. Office of Water Enforcement (OWE)

The growth in ADP usage for this office under Scenario I (see Figure 4-22) is similar to overall EPA growth over the entire period, with an accelerated growth rate over the early years. Growth through 1979 is accelerated by plans to replace the manual review of Discharge Monitoring Reports (DMR) by a more effective automated process. The initial integration of this process (Compliance Analysis System) with the Permit Compliance System is scheduled for FY 1979. Continued development of this system will occur at a slower rate during the early 1980's. Expansion of Water Supply enforcement operations will also require added ADP support. OWE management supports the use of ADP, and feels that the ratio of ADP budget to total budget will increase both to compensate for personnel constraints and to better handle the complexity inherent in tracking operations.

In Scenario II and higher demand for services, there would be a general increase in activities currently conducted with additional emphasis on compliance inspections. In Scenario III (reduced demand), activities would be cut across the board but computerization of tracking functions would at least remain level to compensate for decreases in personnel. Figures 4-23 and 4-24 present the projected ADP growth rates for these scenarios.

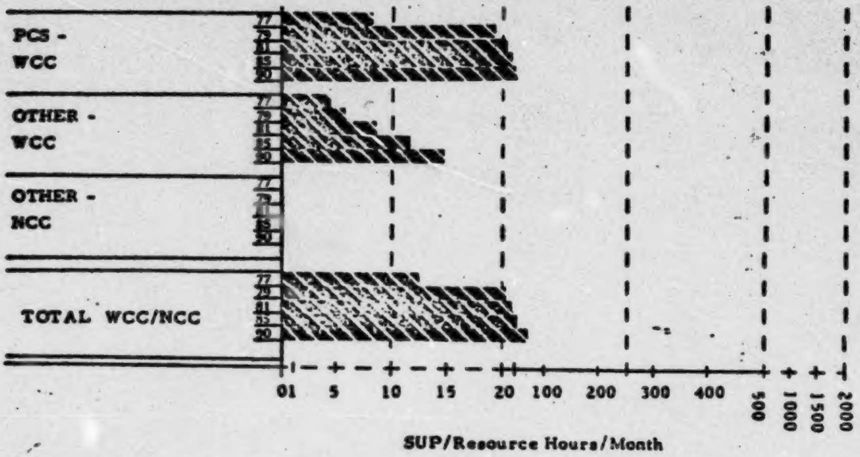


Figure 4-22. Office of Water Enforcement Projected Workload Scenario 1

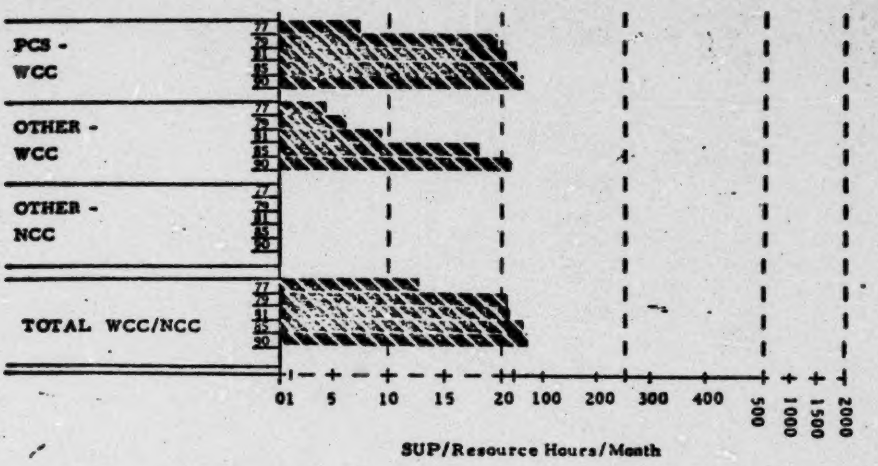


Figure 4-23. Office of Water Enforcement Projected Workload
Scenario 2

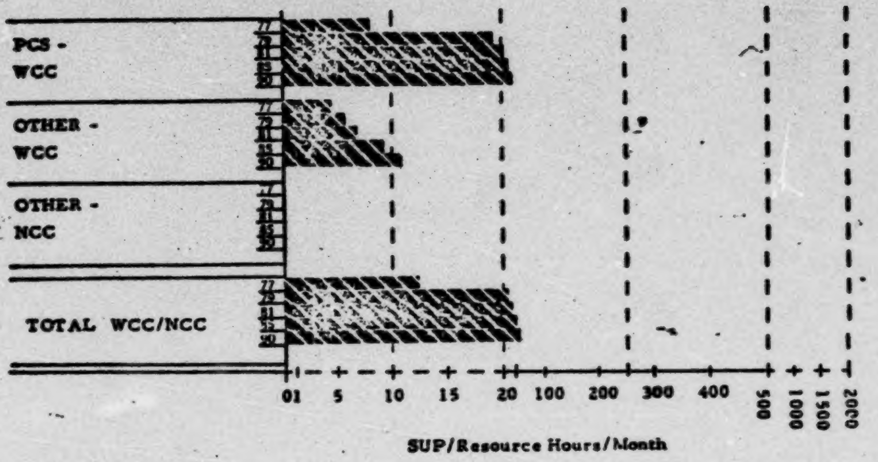


Figure 4-24. Office of Water Enforcement Projected Workload
Scenario 3

C. Office of Mobile Source/Noise Enforcement (OMSNE)

The growth in ADP usage under Scenario I for this office as shown in Figure 4-25 reflects a growth rate almost as great as the overall EPA growth rate. Accelerated growth occurs in the 1977-1979 time frame and then in the 1981-1985 time frame. The first spurt is caused by increases in the relatively new noise enforcement area. The second spurt occurs when mobile source activities become more important because of increased energy conservation needs. Potential new activities include an inspection and maintenance data base which would be updated by States and a system for handling import declaration data. Expansion will be somewhat constrained based on OMSNE management belief that the ratio of ADP budget to total budget will not increase.

In Scenario II (higher demand), the main use of additional resources would be to apply more personnel to fuels enforcement and recall programs. In Scenario III (reduced demand), ADP supporting the fuels program would be cut. Other programs would be trimmed uniformly. Figures 4-26 and 4-27 show the projected ADP growth rates for these scenarios.

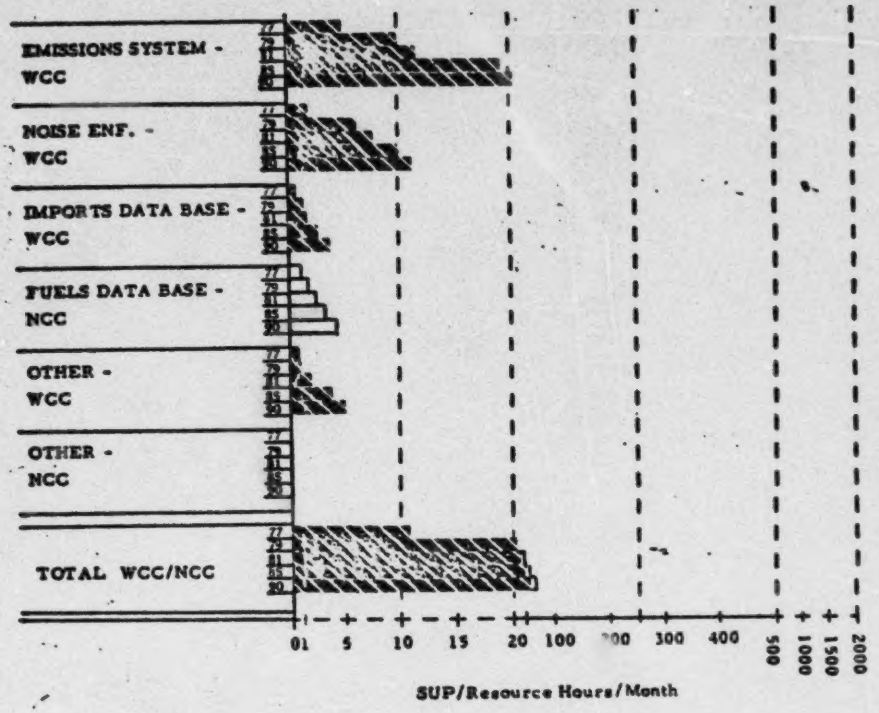


Figure 4-25. Office of Mobile Source/Noise Enforcement Projected Workload - Scenario 1

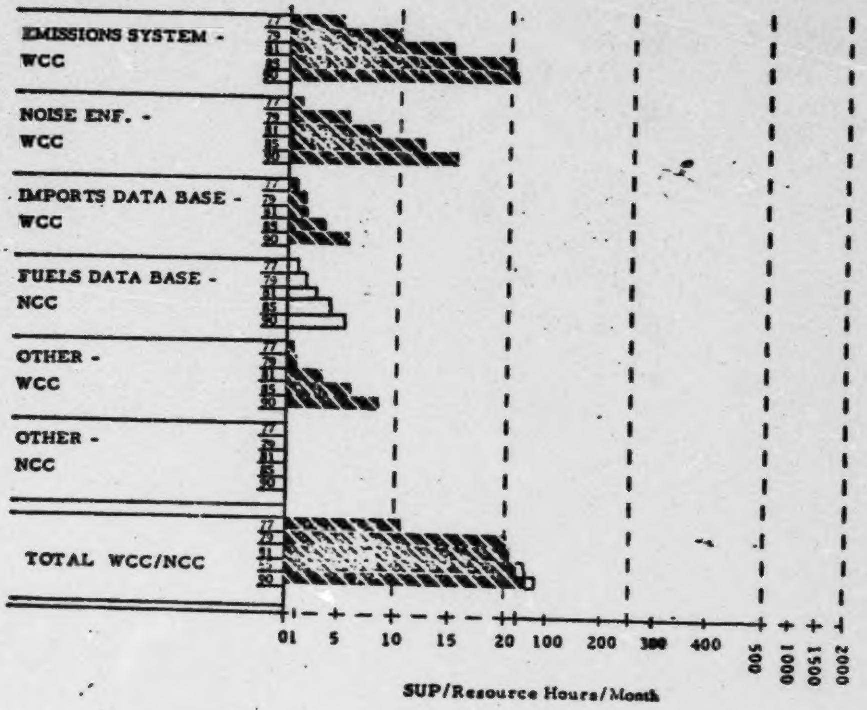


Figure 4-26. Office of Mobile Source/Noise Enforcement Projected Workload - Scenario 2

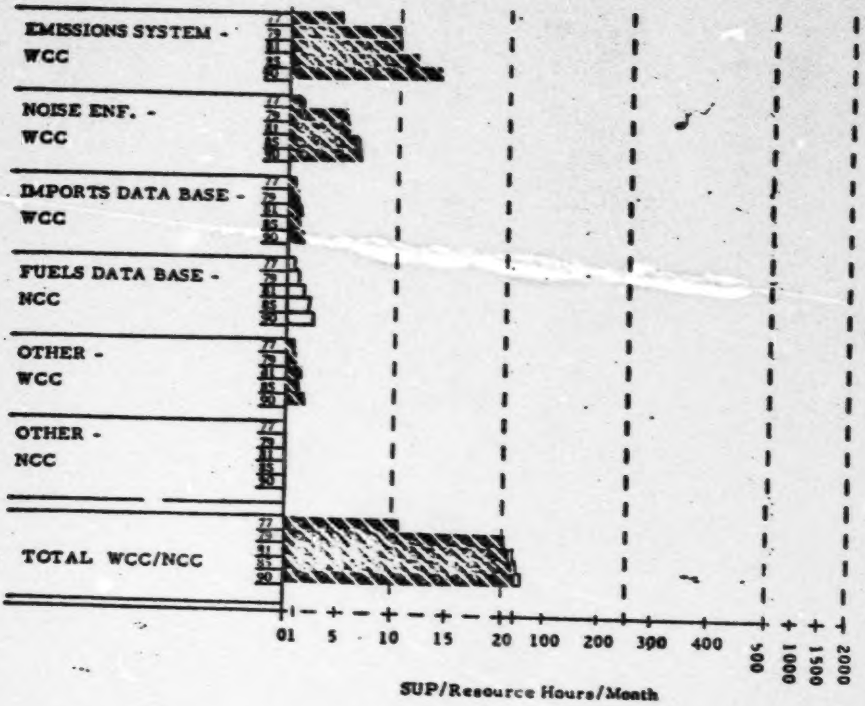


Figure 4-27. Office of Mobile Source/Noise Enforcement Projected Workload - Scenario 3

4.4.4 Office of Water and Hazardous Materials (OWHM)

Growth in ADP usage at the EPA time-sharing facilities for this office is shown in Figure 4-28. A major factor contributing to the increased demand in ADP services after 1979 is the anticipated growth in data collection, analysis and dissemination of solid waste management information. The remaining organizations within the office were all envisioned for steady but limited growth. The impact of toxic activities and the start of operations for new water supply systems will lead to sustained growth.

In Scenario II (higher demands for environmental programs) increased support of toxics activities is a major source of additional growth. Limited new tasks are taken on, but existing ones are performed with increased quality. In Scenario III and decreased demand for environmental programs, peripheral activities (e.g., technical assistance and training) would be the first items cut. Grants would be the next area reduced and regulatory activities would be the last item reduced. Figures 4-29 and 4-30 show future ADP growth rates for these scenarios.

A. Office of Solid Waste Management (OSWM)

Under the mandate of the Resource Conservation and Recovery Act, ADP growth for this office is projected on a relatively rapid upward curve under Scenario I (see Figure 4-31). Analytical and information services required to support increased activities will include the following:

- WRAP system for analysis of facility location, optimum size, transportation networks, and best available technology. This supports regional boundary identification, local government

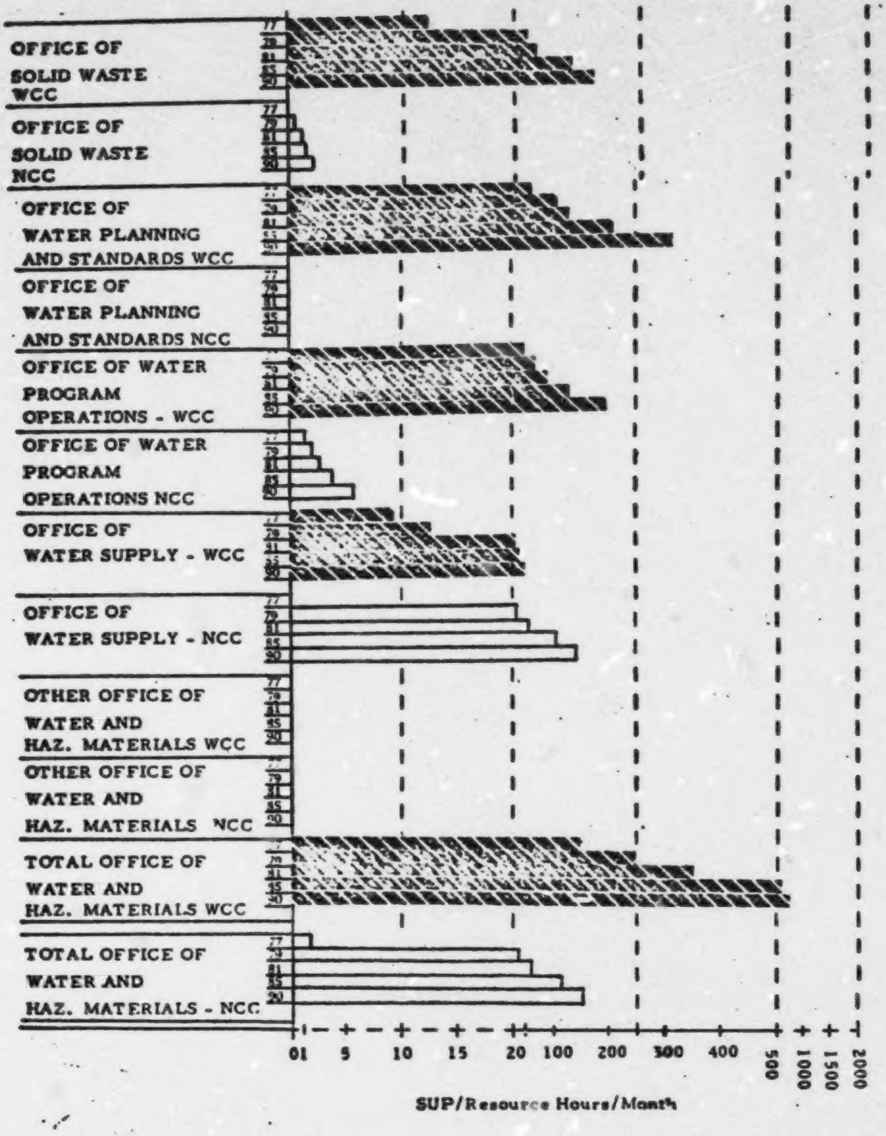


Figure 4-28. Office of Water and Hazardous Materials Projected Workload - Scenario 1

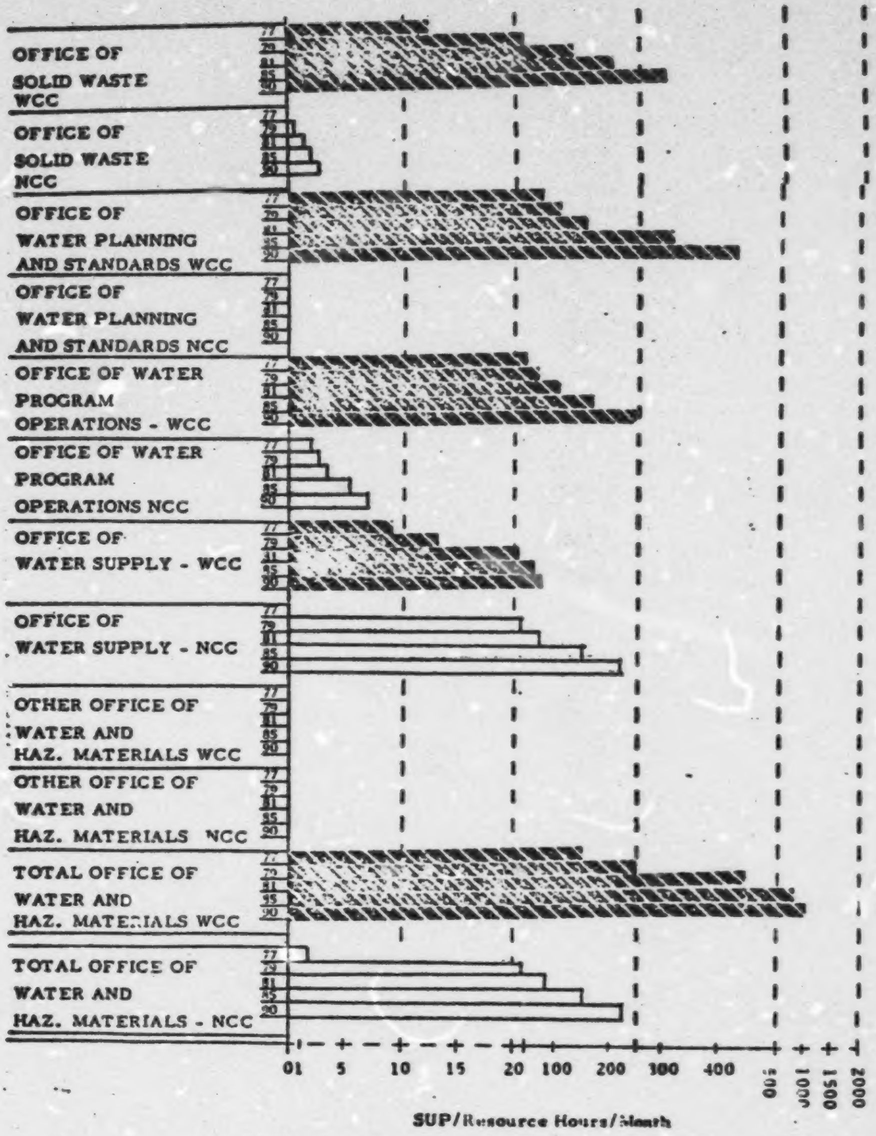


Figure 4-29. Office of Waster and Hazardous Materials Projected Workload - Scenario 2

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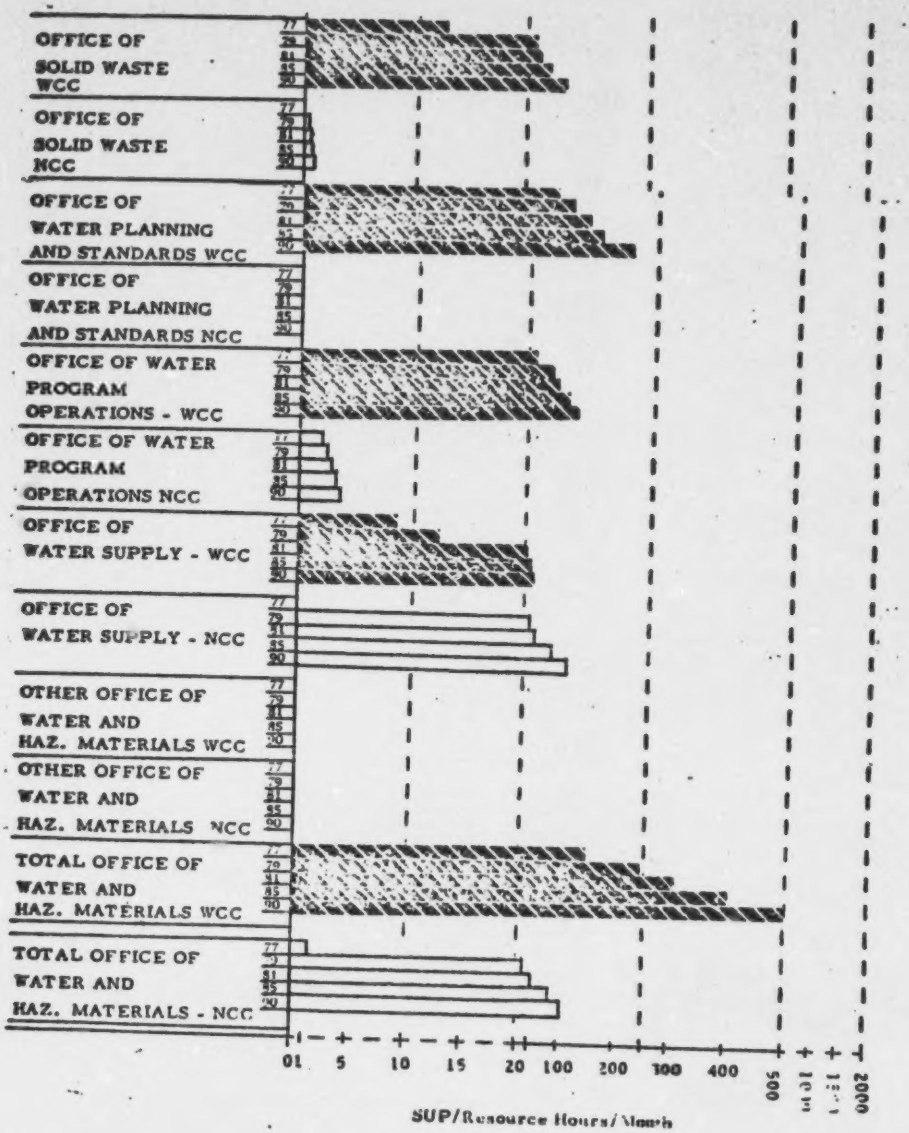


Figure 4-30. Office of Water and Hazardous Materials Projected Workload - Scenario 3

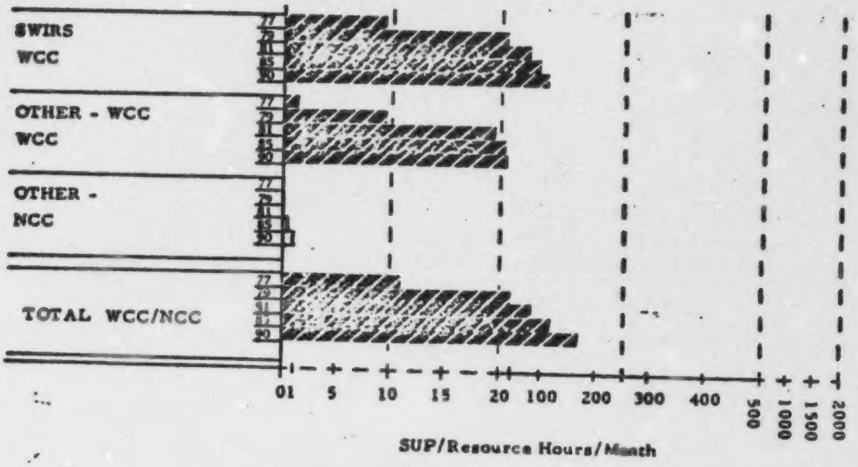


Figure 4-31. Office of Solid Waste Projected Workload
Scenario 1

planning, hazardous waste management planning, sludge disposal and utilization, and resource recovery.

- COLMIS system for analysis of operational aspects of collection and costs for solid waste activities.

- Resource Recovery Policy Studies for solid waste disposal charges, regulatory incentive policies, and evaluation of environmental impacts.

- Chemical Abstracts Condensates for response to public and private agencies concerning chemical compounds and other substances.

- PMIS, Electronic Composition System, and Solid Waste Mailing Key are systems for implementing OSW programs for rapid dissemination of information to public and private sectors on solid and hazardous waste management technology, resource conservation and recovery, and facility operation and management.

Workload would increase at a faster rate for program implementations under Scenario II (Figure 4-32). Scenario III would continue growth but at a slower rate (Figure 4-33).

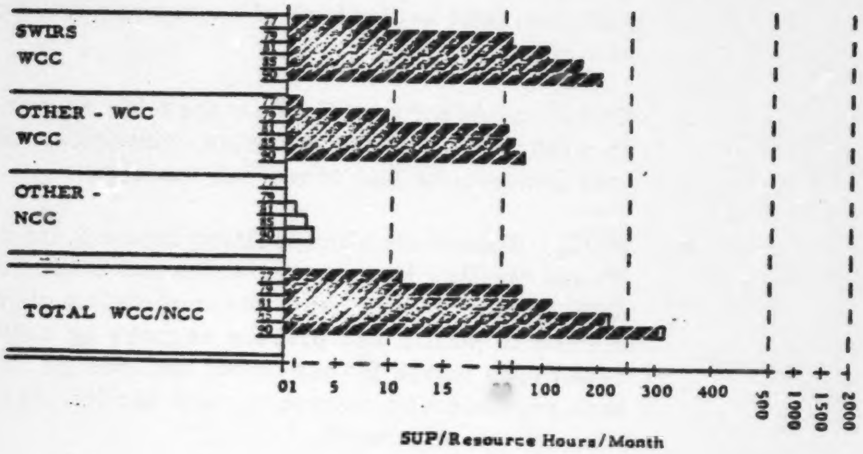


Figure 4-32. Office of Solid Waste Projected Workload Scenario 2

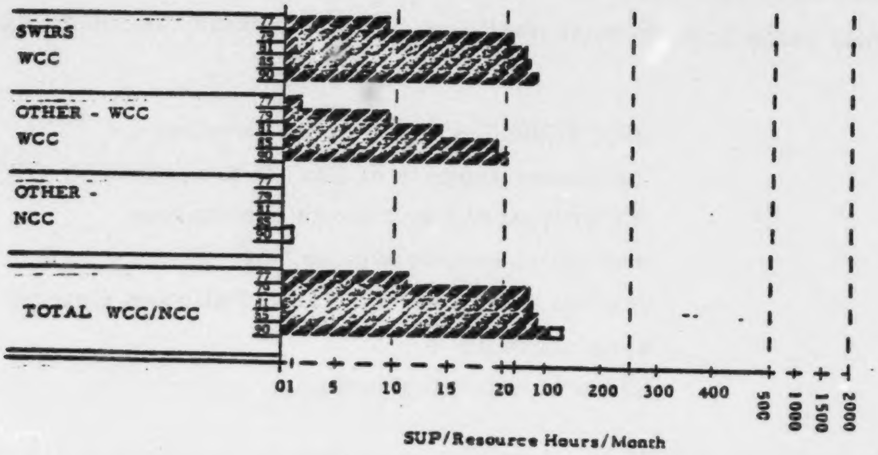


Figure 4-33. Office of Solid Waste Projected Workload
Scenario 3

B. Office of Water Planning and Standards (OWPS)

The projected ADP time-sharing for Scenario I (see Figure 4-34) shows a steady increase with a growth rate similar to the overall EPA growth rate. While most managers interviewed stated that the established water programs will not be as high a priority as toxics, solid waste or energy activities, there are many potential developments which indicate that some growth must continue. These include the following:

- BIOSTORET system being developed
- Increased support of Toxics programs by OWPS
- Water quantity and usage monitoring
- Non-point source monitoring
- Section 208 (Federal Water Pollution Control Act) area planning
- Effluent data monitoring.

In addition, OWPS management envisions an increase in the ratio of ADP budget to total budget within the office.

Scenario II, (higher demand), would result in little increase in the quantity of activities but there would be a greater intensity of effort. Additional efforts would be expended in analysis to develop effluent guidelines and in collection of data supporting the development of Toxics controls. In Scenario III (reduced demand), less data would be available to support the decision making process, and the services provided would be less usable, i.e., STORET data base would not be as current. Figures 4-35 and 4-36 show the projected ADP growth rates for these scenarios.

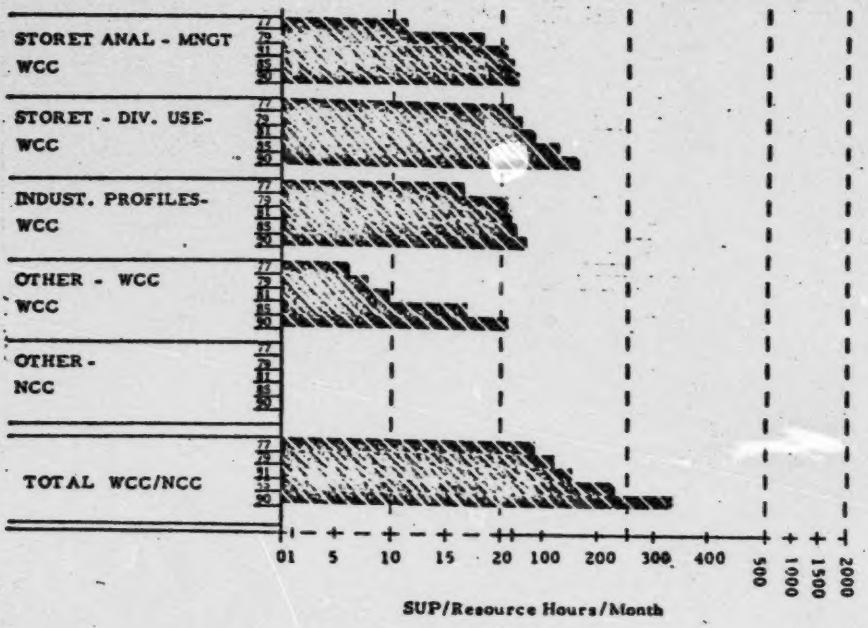


Figure 4-34. Office of Water Planning and Standards Projected Workload - Scenario 1

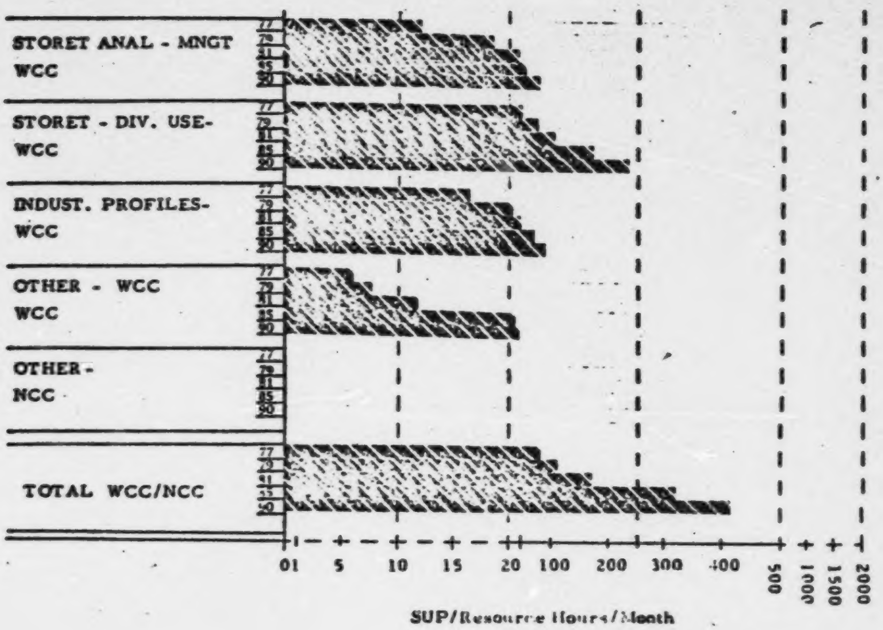


Figure 4-35. Office of Water Planning and Standards Projected Workload - Scenario 2

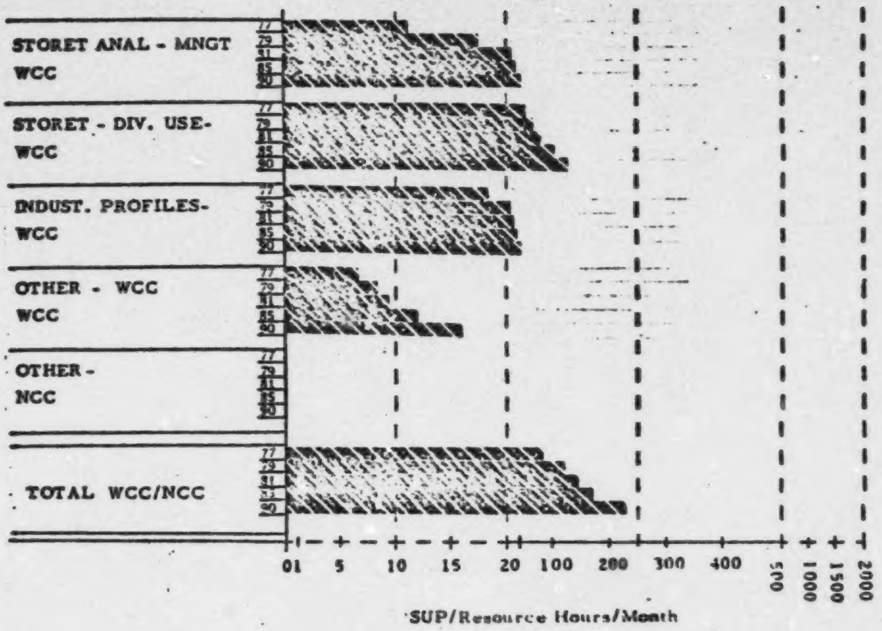


Figure 4-36. **Office of Water Planning and Standards Projected Workload - Scenario 3**

C. Office of Water Program Operations (OWPO)

The projected ADP time-sharing growth rate for Scenario I (see Figure 4-37) shows a fairly high increase through 1979 which levels off to a more reduced rate of growth through the remaining period. The higher growth rate through 1979 is caused by explosive demand expected for the largest activity in OWPO, the NEEDS survey. This growth estimate is predicated on predicted increases in:

- Ad hoc congressional inquires and report requests
- State use of NEEDS to supplement tighter budgets and reduced staff.

While grant money is expected to continue to be sufficient, the OWPO program budget will not grow as rapidly as some others. Most managers interviewed stated that the established water programs will not be as high a priority as Toxics, Solid Waste or Energy activities. However, some growth in time-sharing usage by OWPO is envisioned. OWPO management strongly supports the need for ADP and foresees an increase in the ratio of ADP to program budget. The current DAA stated that without ADP, the management of a program with the size and complexity of construction grants would be virtually impossible. In addition, several potential growth areas within OWPO will require ADP support. These include:

- Control of ocean exploitation
- Efforts related to the Hazardous Materials section of PL 92-500
- Increased Operations and Maintenance (O&M) tracking
- Development and use of cost estimating techniques

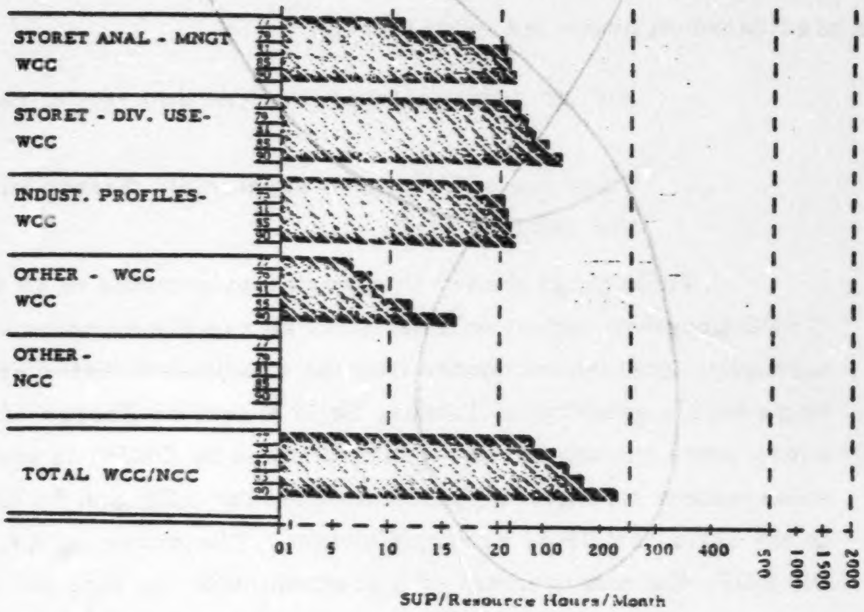


Figure 4-36. Office of Water Planning and Standards Projected Workload - Scenario 3

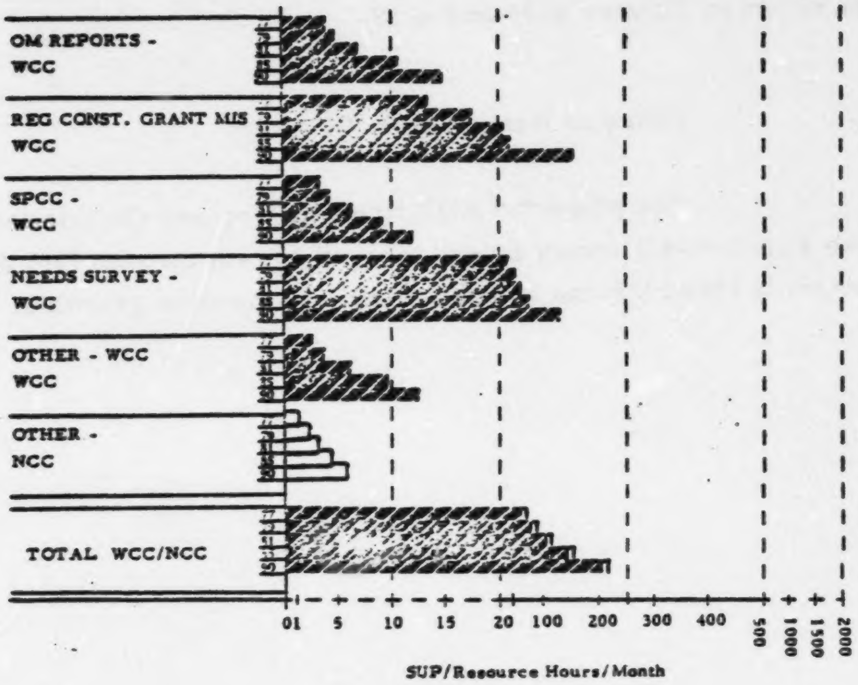


Figure 4-37. Office of Water Program Operations Projected Workload - Scenario 1

In Scenario II (higher demand), additional resources would be used to increase the intensity of existing programs. ADP usage would increase somewhat but not at the same percentage as the budget increase. In Scenario III (reduced demand), energy effort would be made to limit ADP cuts because programs could not operate with much less ADP support than currently exists. The workload projections for these scenarios are shown in Figures 4-38 and 4-39.

D. Office of Water Supply (OWS)

The projected ADP time-sharing growth rate for Scenario I (see Figure 4-40) shows a very marked growth through 1981 with lessened growth in 1981-1985 and an even more conservative growth in 1985-1990.

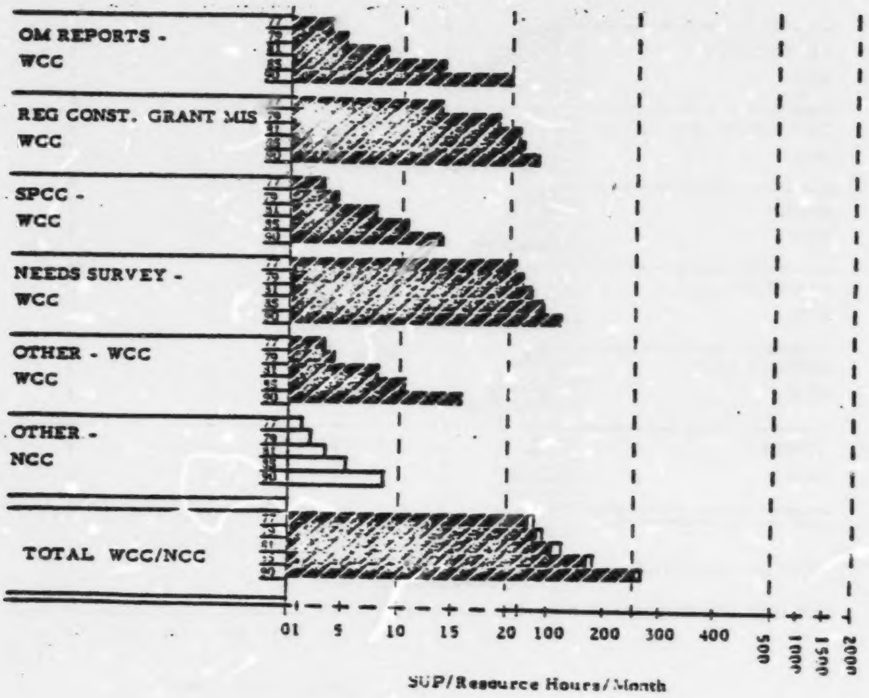


Figure 4-38. Office of Water Program Operations Projected Workload - Scenario 2

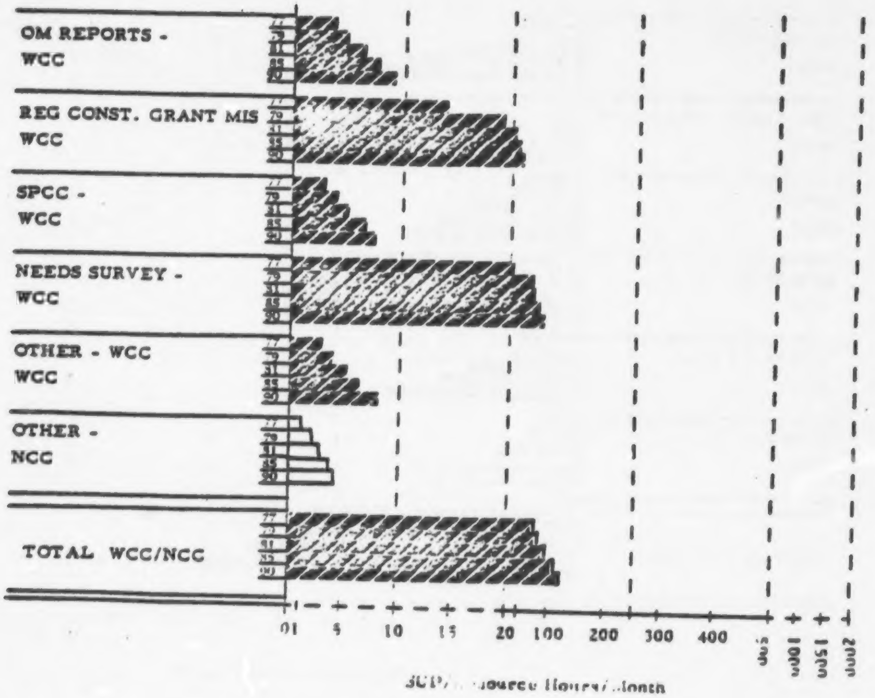


Figure 4-39. Office of Water Program Operations Projected Workload - Scenario 3

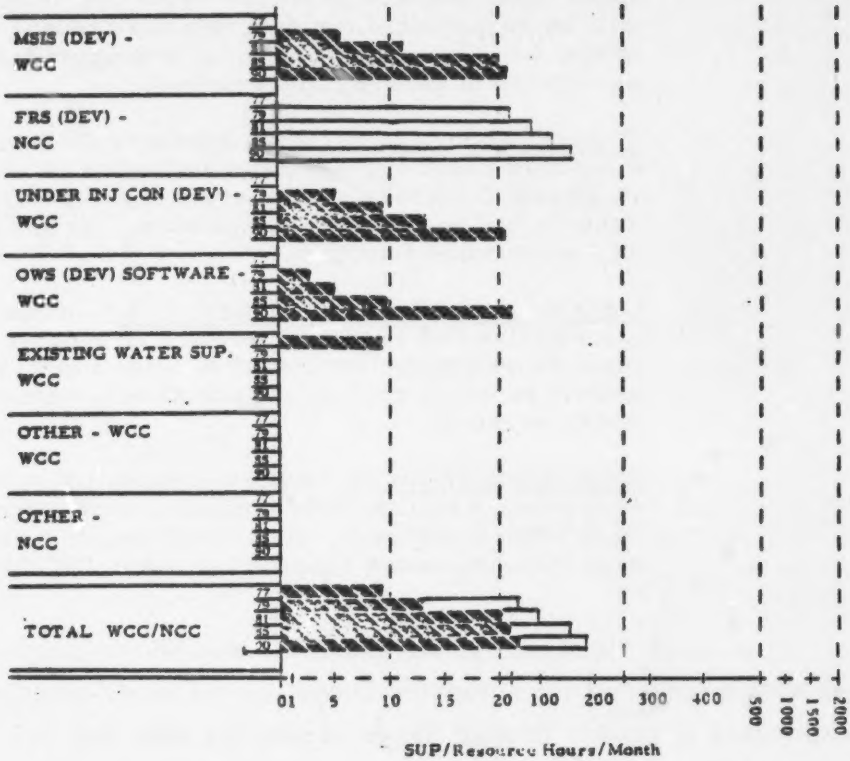


Figure 4-40. Office of Water Supply Projected Workload Scenario 1

This trend is caused by the fact that as a new office with a new program, OWS is just "gearing up" from an ADP perspective. By 1979 four new systems which subsume existing activities and satisfy many new legislative requirements will be operational These are:

- Model State Information System (MSIS): a management information system which will be provided to States to allow them to meet mandated reporting requirements; OWS will be responsible for program maintenance, user assistance, and using the programs to support tracking/reporting on interstate carrier conveyances.
- Federal Reporting System: supports OWS in meeting mandated reporting requirements such as ad hoc reports to satisfy Congressional queries and regularly scheduled reports to Congress on compliance, variances, exceptions and enforcement actions.
- Underground Injection Countrol (UIC): a management information and reporting system to support the requirement to minimize the impact of injection wells and other activities which may affect actual or potential drinking water sources.
- Application Software: analysis capabilities in support of mission requirements including applications such as cost/benefit analyses, statistical analysis and modeling: also includes usage support for other OWHM elements.

EPA management has indicated that Water Supply is a growth area with a potential for a doubled budget by the early-mid 1980's. Thus, a rapid rate of growth in ADP usage during the next five years is an apparent trend. After this period OWS management feels that needed capabilities will be in place and a lessened emphasis will be placed on ADP. Several potential programmatic growth areas coupled with increased use of the existing capabilities will require some continued growth in the 1983 through 1990 period. New areas include:

- Managing grants for small community water supply systems
- Tracking of non-public water systems

- Monitoring and analyzing the effects of toxic spills/discharges on water supplies.

This latter area (toxics monitoring/analysis) would be the major area of increased activity in Scenario II (higher demand). In Scenario III (reduced demand), across the board cuts would be required. OWS management found this scenario difficult to envision since virtually all OWS efforts are related directly to Congressional mandates. The projected workload for these scenarios is shown in Figures 4-41 and 4-42.

4.4.5 Office of Air and Waste Management (OAWM)

Growth in ADP usage for OAWM shows an initial increase in NCC operations under Scenario I (Figure 4-43) and a reduced rate of growth after 1979. This initial period of growth is caused primarily by the Office of Air Quality Planning and Standards and projected increases in ADP support of air quality guidelines development and trade-off analyses. Growth in energy programs and associated monitoring of regional emissions variations is an additional contributing factor. Beyond 1979, NCC operations show a reduced rate of growth caused by a transfer of air data handling functions to states and regions and a streamlining of air data management systems.

Growth in WCC operations for OAWM under Scenario I is steady but limited. Areas contributing to growth include analysis and modeling of mobile source emissions, increases in local noise control programs and research, and expected new legislation in radiation programs.

Scenario II (Figure 4-44) and greater demand for environmental safeguards would impact all programs by increases in local assistance,

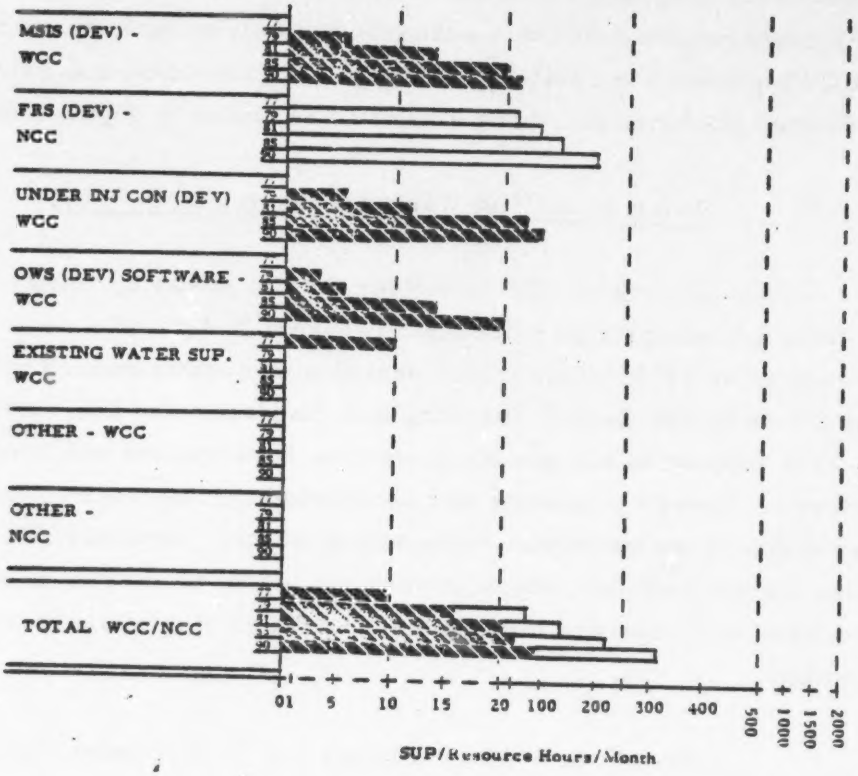


Figure 4-41. Office of Water Supply Projected Workload Scenario 2

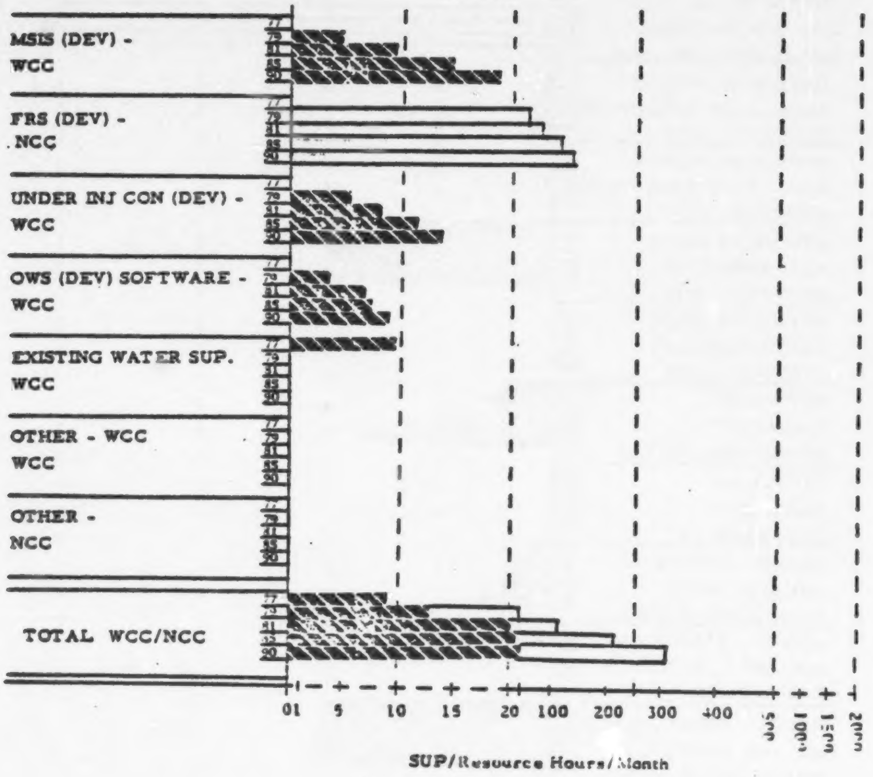


Figure 4-42. Office of Water Supply Projected Workload
Scenario 3

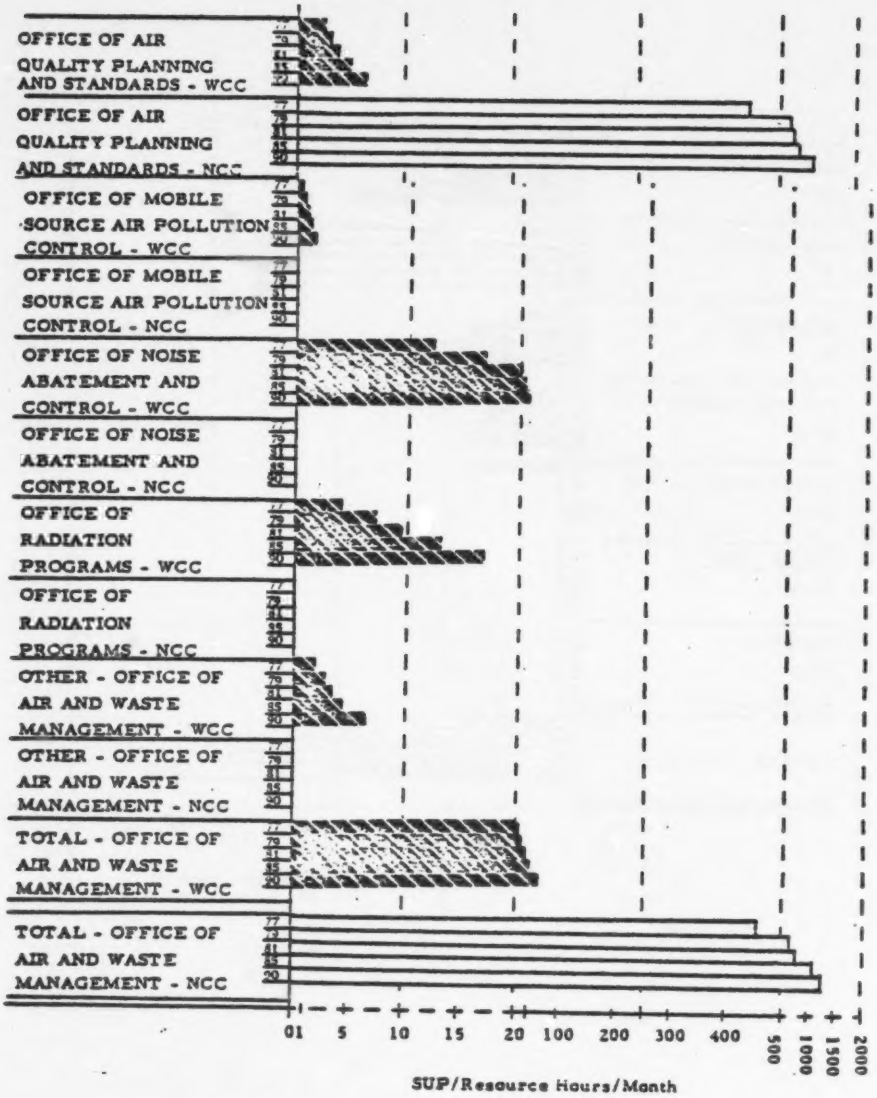


Figure 4-43. Office of Air and Waste Management Projected Workload Scenario 1

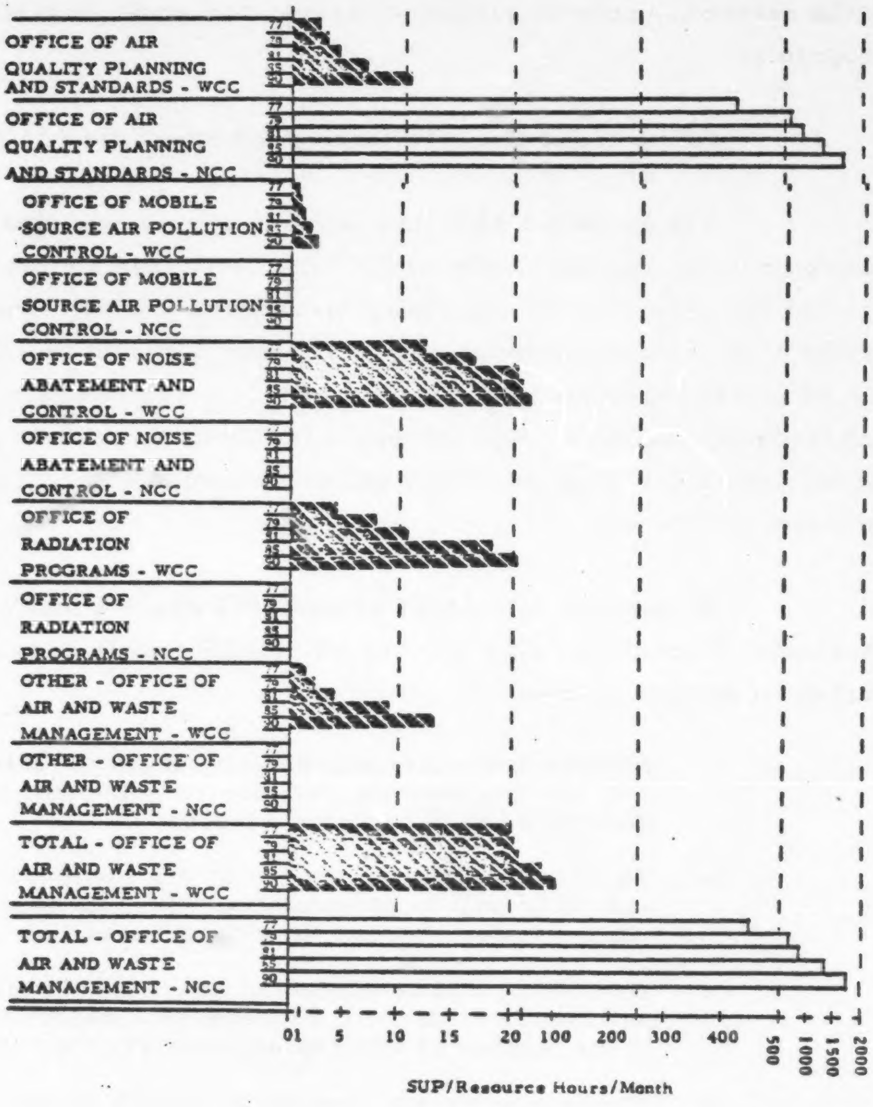


Figure 4-44. Office of Air and Waste Management Projected Workload Scenario 2

research, and development of national standards. Scenario III (Figure 4-45) would cause a general curtailment of these programs, particularly in the research and local assistance areas, and would lengthen the remaining programs.

A. Office of Air Quality Planning and Standards (OAQPS)

The projected ADP time-sharing growth rate (see Figure 4-46) shows an initial increase between 1977 and 1979, then a much more gradual increase over the remaining years through 1990. The initial period of rising usage through 1979 is caused primarily by SAROAD and projected increases in modeling for support of guidelines development and trade-off analyses. EDS increases in this early period reflect an initial growth in energy programs and associated monitoring of regional emission variations.

Subsequent ADP usage beyond 1979 shows a much reduced growth rate under Scenario I. This leveling off of ADP growth is caused by a variety of factors including the following:

- Regions and states will perform more of their own air data handling and less raw data will be maintained by EPA headquarters.
- Existing data management systems such as SAROAD and NEDS will be streamlined, resulting in more efficient operation and throughput rates.
- Monitoring will be conducted on a wider range of pollutants but this will be offset by a reduction in the number of stations utilized for data collection.
- No changes were projected by OAQPS in the relationship of ADP to the total program.

Scenario II (Figure 4-47) would impact OAQPS by increasing activity in setting standards and supporting data analysis and monitoring. More toxic chemical monitoring would be performed.

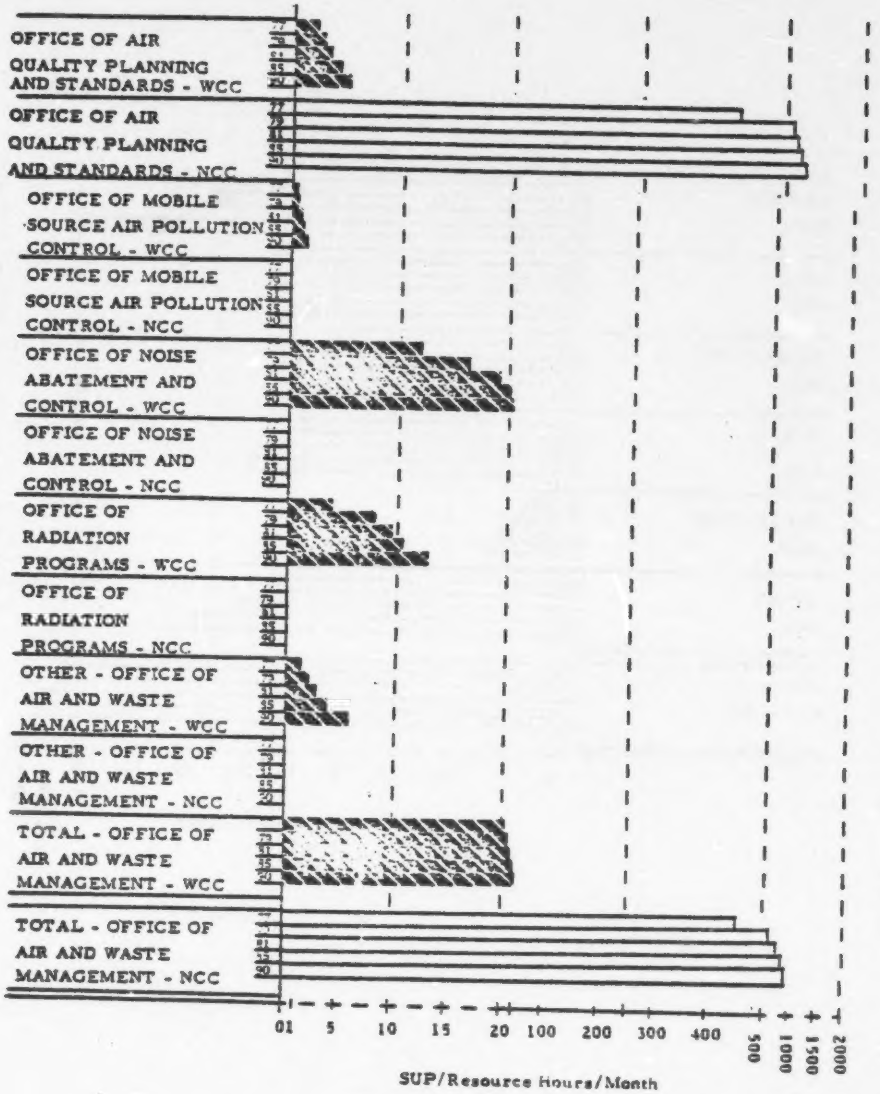


Figure 4-45. Office of Air and Waste Management Projected Workload Scenario 3

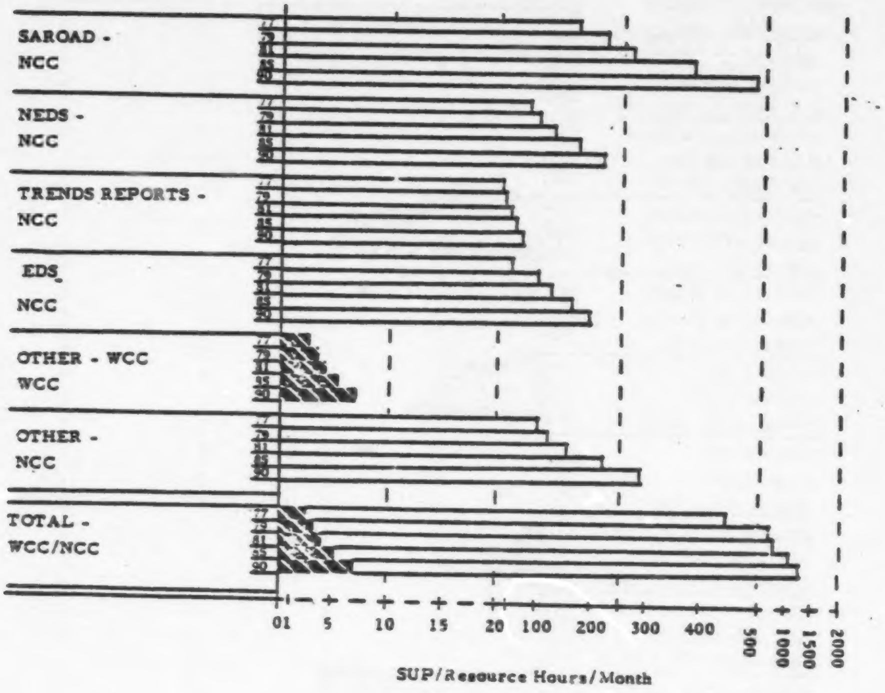


Figure 4-46. Office of Air Quality Planning and Standards Projected Workload - Scenario 1

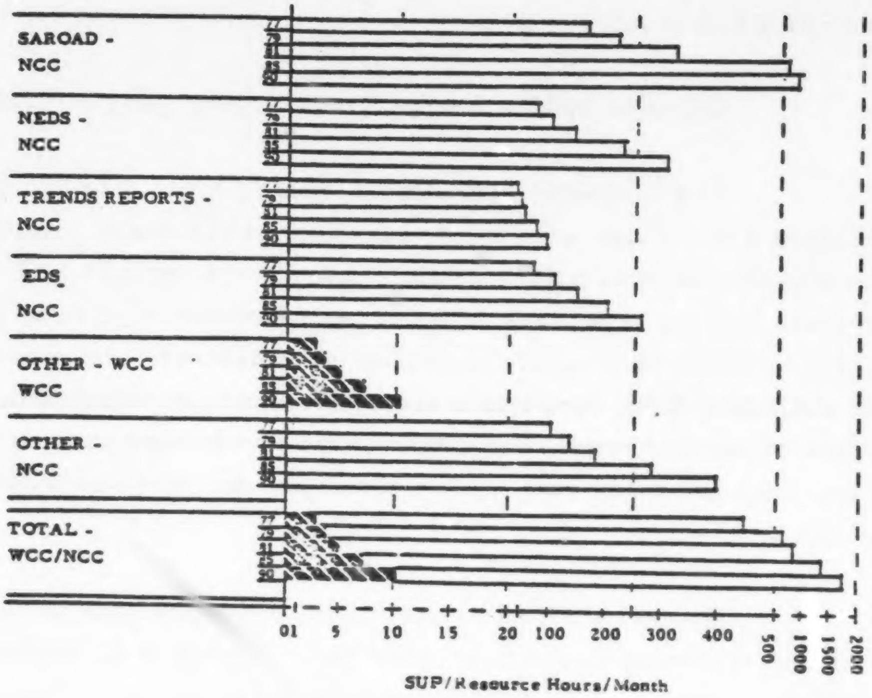


Figure 4-47. Office of Air Quality Planning and Standards Projected Workload - Scenario 2

Scenario III (Figure 4-48) would cause cutbacks in all areas with heaviest reductions in data base systems such as NEDS and SAROAD.

Distributed processing in the regions and states will impact data base systems such as SAROAD with more of the air data processed locally and EPA headquarters processing reduced volumes of summarized and finished information.

B. Office of Mobile Source Air Pollution Control (OMSAPC)

The projected ADP time-sharing growth rate for Scenario I (Figure 4-49) shows only minor growth over the years, starting from a relatively low base point. Little change in the ratio of ADP to total program budgets is foreseen. Activity is expected to rise in the area of fuel economy testing, identification of emissions from new fuels (oil shale gasoline), inspection and maintenance of vehicles in use, and standards development. Less ADP usage is expected in the processing of test data and more usage is predicted for analysis and modeling activities.

Scenario II would impact OMSAPC activities by increasing the depth of data analysis of existing data. Scenario III impact would eliminate portions of standards development activities. Figures 4-50 and 4-51 show projected ADP growth rates for these scenarios.

C. Office of Noise Abatement and Control (ONAC)

Projected growth of ONAC in Scenario I (see Figure 4-52) shows a steady increase over the years with ADP budgets remaining in a constant ratio with total ONAC budgets. Areas of activity contributing to ONAC growth consist of the following:

- Substantial increases in the number of community level noise programs (currently 600) and increased general authority in state and local areas.

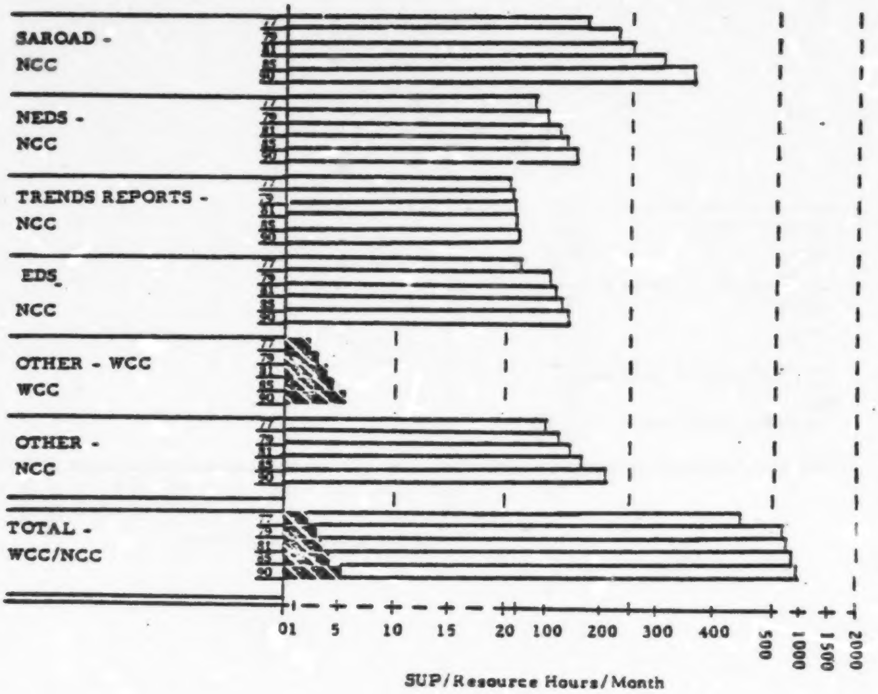


Figure 4-48. Office of Air Quality Planning and Standards Projected Workload - Scenario 3

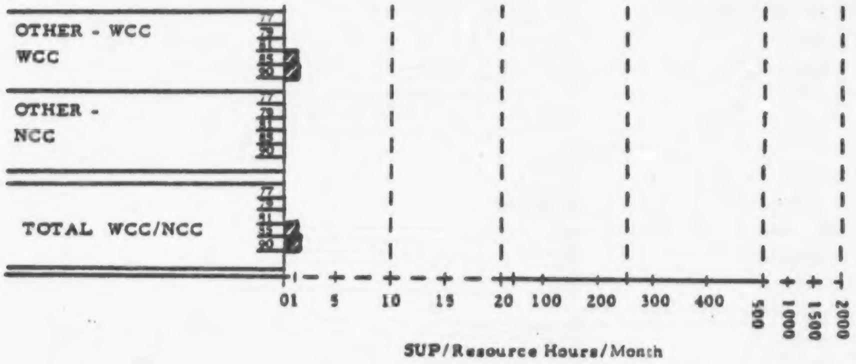


Figure 4-49. Office of Mobile Source Air Pollution Control Projected Workload - Scenario 1

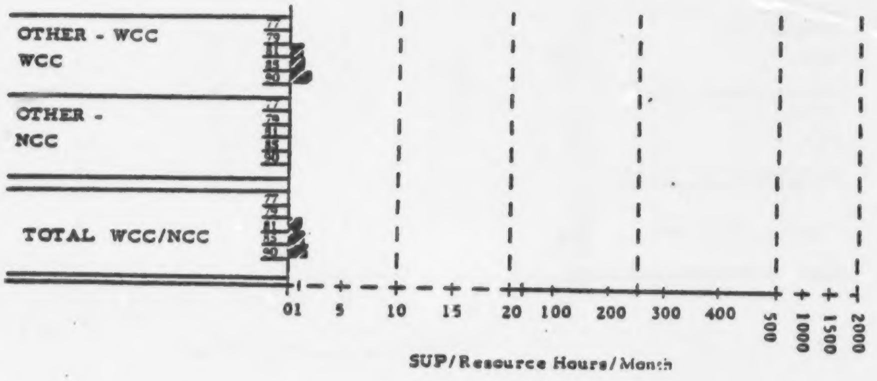


Figure 4-50. Office of Mobile Source Air Pollution Control Projected Workload - Scenario 2

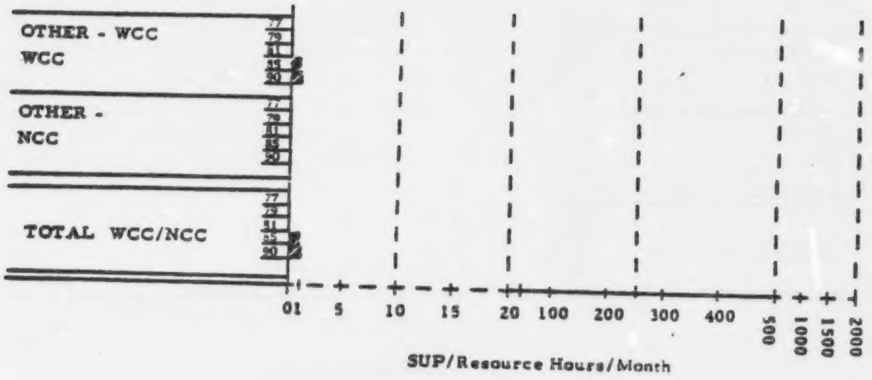


Figure 4-51. Office of Mobile Source Air Pollution Control Projected Scenario 3

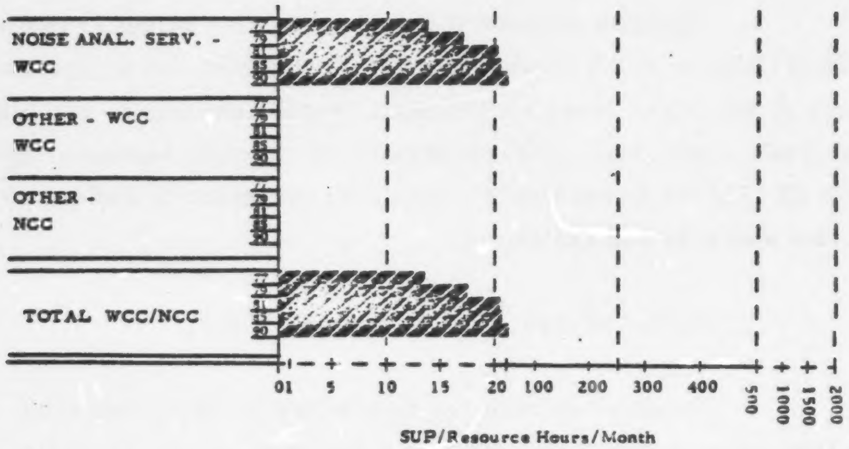


Figure 4-52. Office of Noise Abatement and Control Projected Workload Scenario 1

- Development of national standards, particularly for aviation, and analysis of airport noise control techniques.
- Noise control research and development in commercial products and coordination of increasing R&D programs in other Federal agencies.
- Increasing public knowledge of the impact of noise on health and subsequent demand for noise abatement.

Greater demand for environmental safeguards under Scenario II (Figure 4-53) would impact ONAC activities by increasing assistance to state and local government, establishment of national standards, and R&D programs. Lesser demand for agency services under Scenario III (Figure 4-54) would cause a curtailment of Federal R&D programs and aviation activities.

D. Office of Radiation Programs (ORP)

Relative growth for this office is very dependent upon new legislation and a new law affecting this program is expected in two or three years, focusing on naturally occurring and non-ionizing radiation. Other areas of activity contributing to steady growth in ADP utilization consist of the following under Scenario I (see Figure 4-55).

- Development of standards and guidelines for radioactive waste handling and radiation associated with medical treatment.
- Relationships will continue to grow between the EPA Radiation Program and Department of Energy; Health, Education and Welfare; and Nuclear Regulatory Commission.
- Greater use will be made of data analysis and modeling in support of radiation limits for drinking water, uranium fuel cycles, emissions from tailings waste, microwaves and radio frequency waves, ocean dumping and shallow land burial.

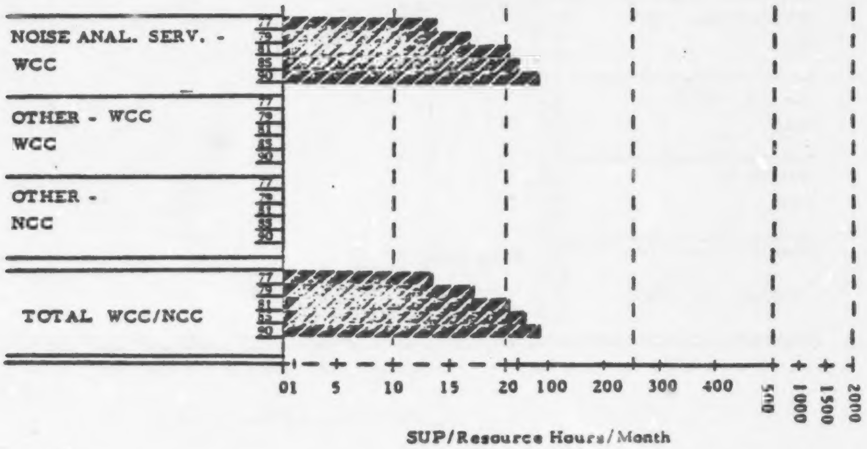


Figure 4-53. Office of Noise Abatement and Control Projected Workload Scenario 2

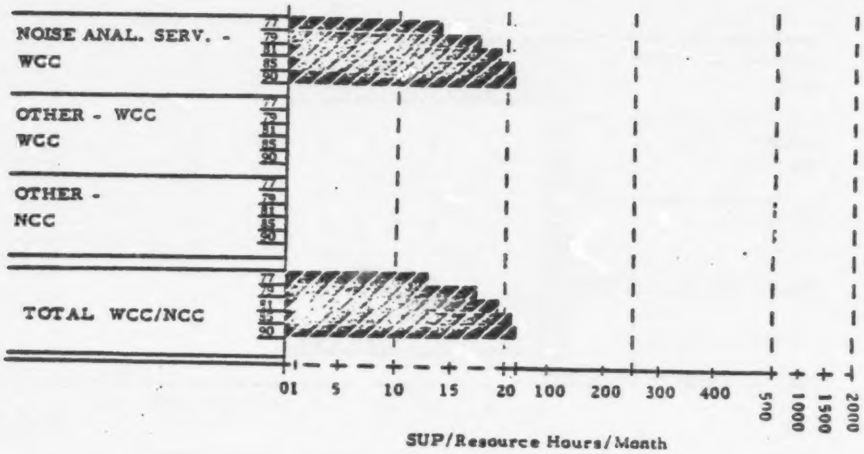


Figure 4-54. Office of Noise Abatement and Control Projected Workload Scenario 3

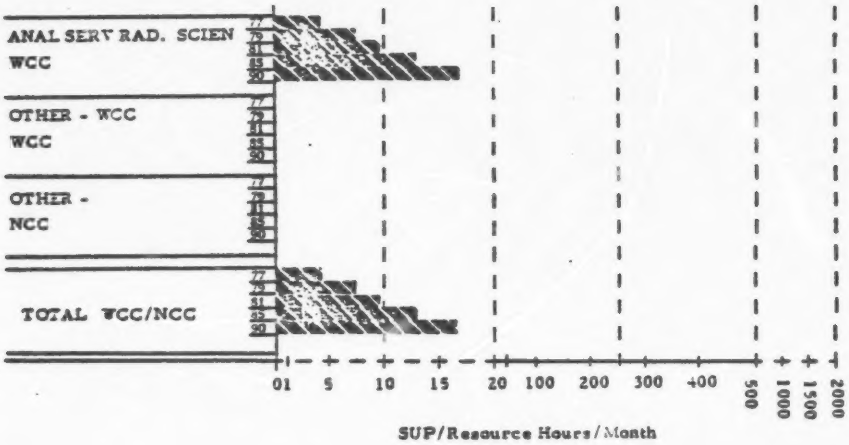


Figure 4-55. Office of Radiation Programs Projected Workload Scenario 1

- Increased support to states in environmental radiological assessment programs.

Scenario II (Figure 4-56) and increased ADP utilization would be impacted by systems to assist in the decision-making process associated with emergency responses, for state-level use. Scenario III (Figure 4-57) would be primarily affected by the extension of projects out in time rather than by curtailment of any programs.

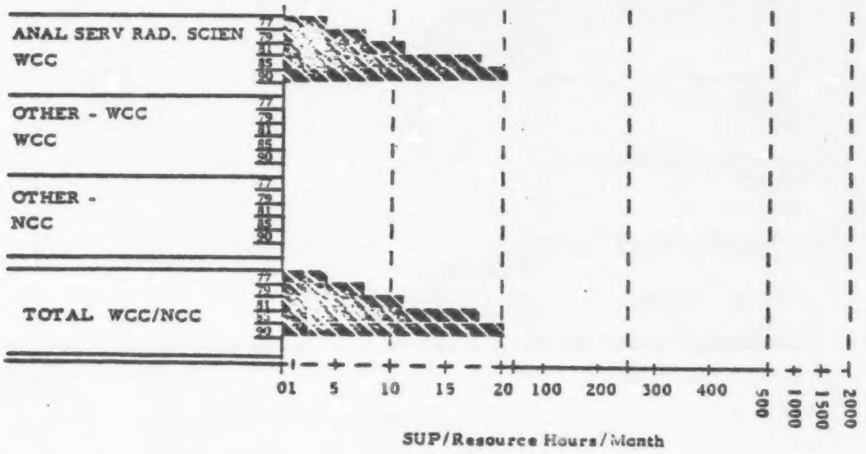


Figure 4-56. Office of Radiation Programs Projected Workload
Scenario 2

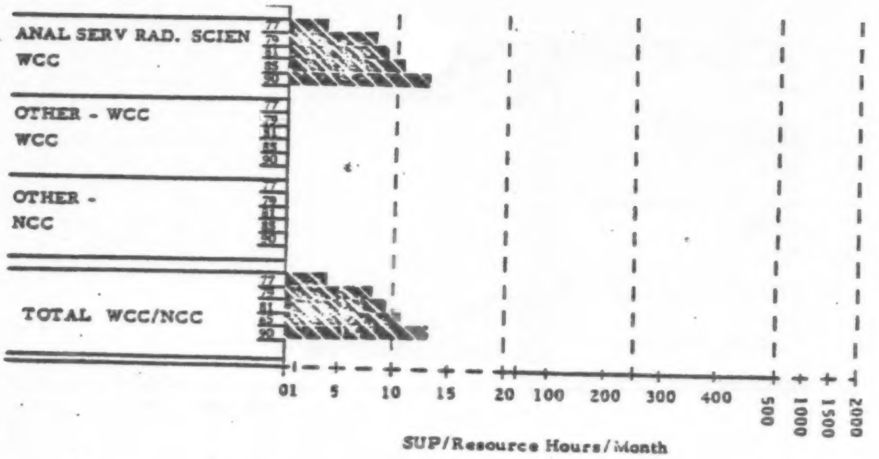


Figure 4-57. Office of Radiation Programs Projected Workload Scenario 3

4.4.6 Office of Toxic Substances (OTS)

Growth in ADP usage for this office is projected on a relatively high rate for Scenario I (see Figure 4-58), due to increases in program activities under provisions of theToxic Substances Control Act of 1976. The pesticides activities are projected for more limited growth.

Scenario II (Figure 4-59) and greater demand for environmental safeguards would cause high growth rates in all toxics program areas through increases in research, testing and regulatory functions. Pesticides effects research would be stimulated. In Scenario III (Figure 4-60) programs in toxics would be implemented more slowly and levels of service would be decreased across all activities.

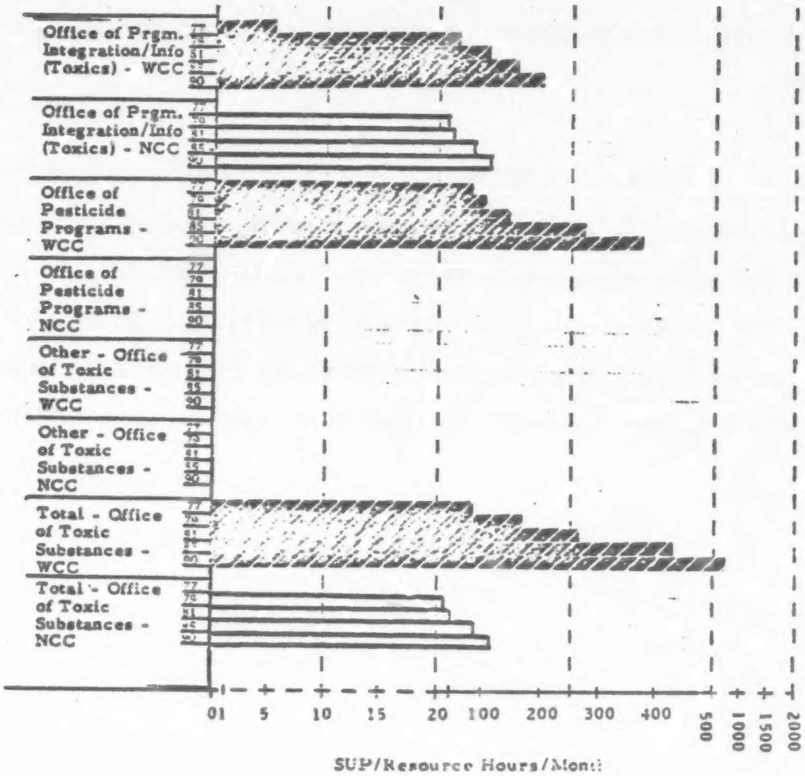


Figure 4-58. Office of Toxic Substances Projected Workload Scenario 1

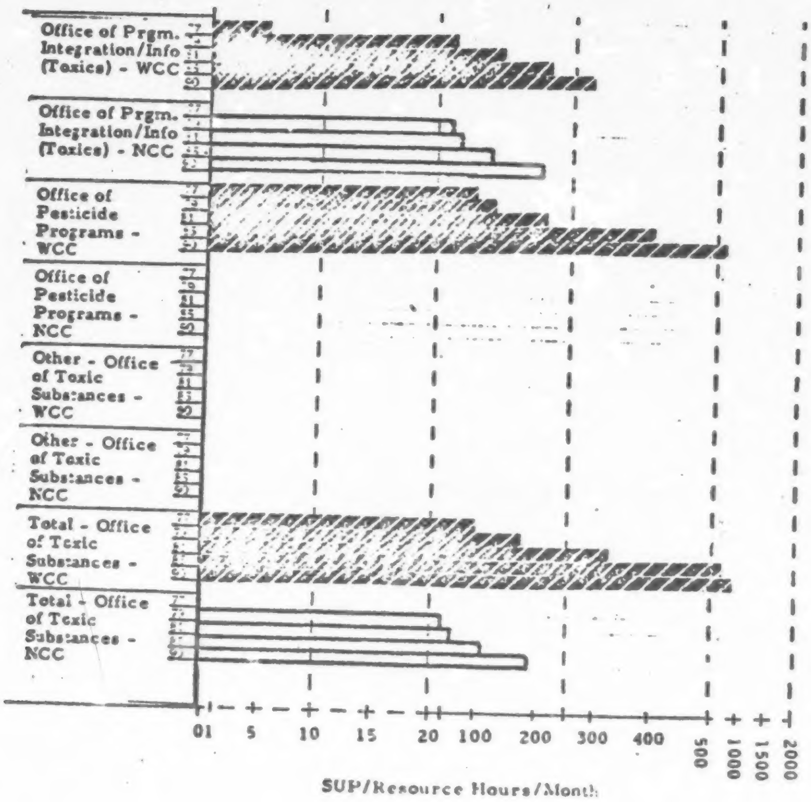


Figure 4-59. Office of Toxic Substances Projected Workload Scenario 2

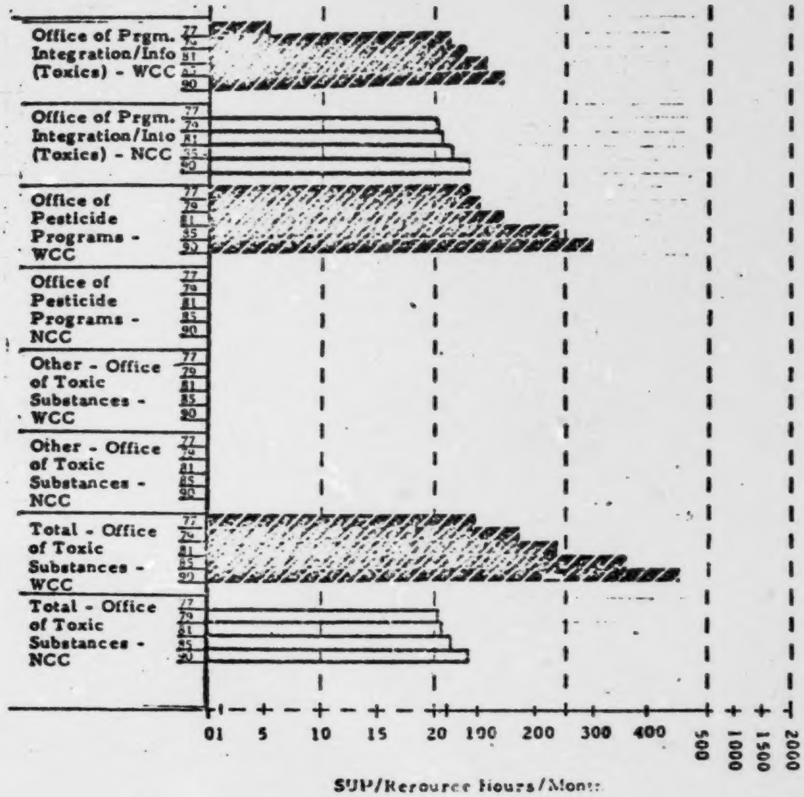


Figure 4-60. Office of Toxic Substances Projected Workload Scenario 3

A. Office of Program Integration/Information (Toxics)

Growth in ADP usage for this office is projected on a relatively high rate for Scenario I (see Figure 4-61.1), due to increases in program activities under provisions of the Toxic Substances Control Act of 1976. Programs and policies affecting growth include the following:

- Increased mathematical modeling for prediction of chemical levels in the environment.
- Higher levels of chemical test data for evaluation and correlation using epidemiological studies.
- Growth in searches of data bases to evaluate citizen petitions, prepare regulations, and evaluate substantial risk notices.
- Searches of DROP, STORET, SAROAD, and other agency data files for environmental levels of more chemical substances.
- Development and operation of a Chemical Substructure Search System for the identification of structurally similar chemicals and evaluation of biological activity.
- The ratio of ADP budgets to total OTS budgets is expected to increase as program activity levels rise.

Scenario II (Figure 4-62.1) and greater demand for environmental safeguards would cause high growth rates in all program areas through increases in research, testing, and regulatory functions. Scenario III (Figure 4-63.1) would cause a slower rate of program implementation but would not eliminate any program activities.

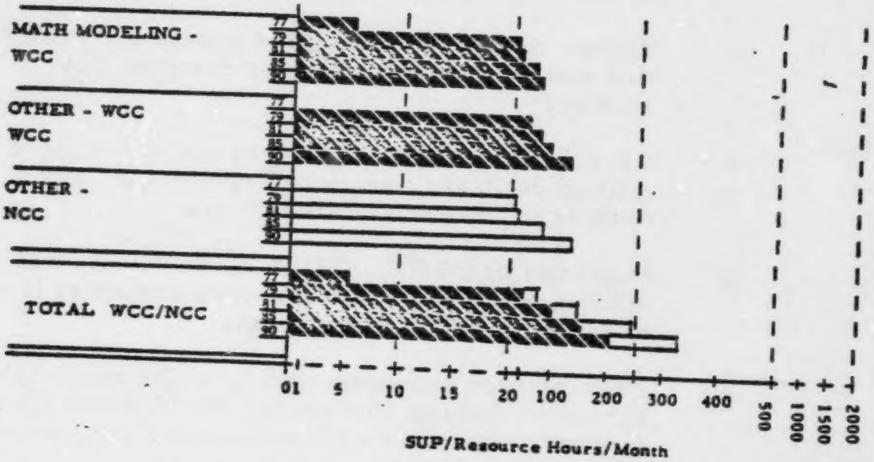


Figure 4-61.1. Office of Program Integration/Information (OTS) Projected Workload Scenario 1

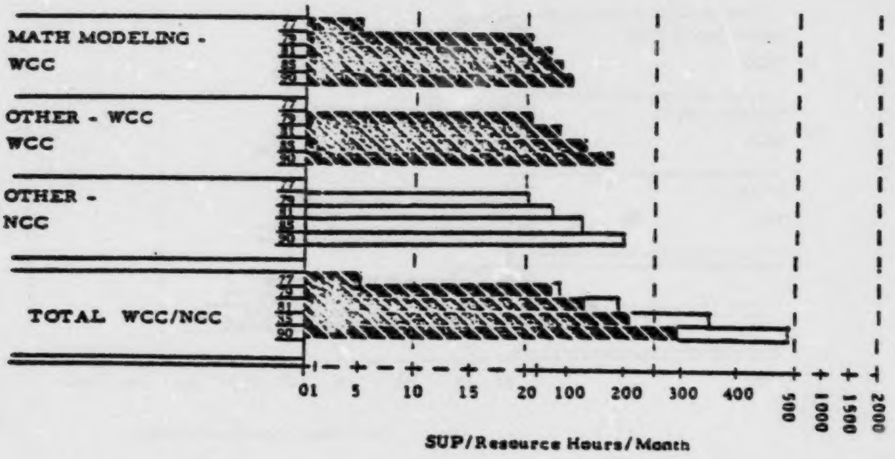


Figure 4-62.1. Office of Program Integration/Information (OTS) Projected Workload Scenario 2

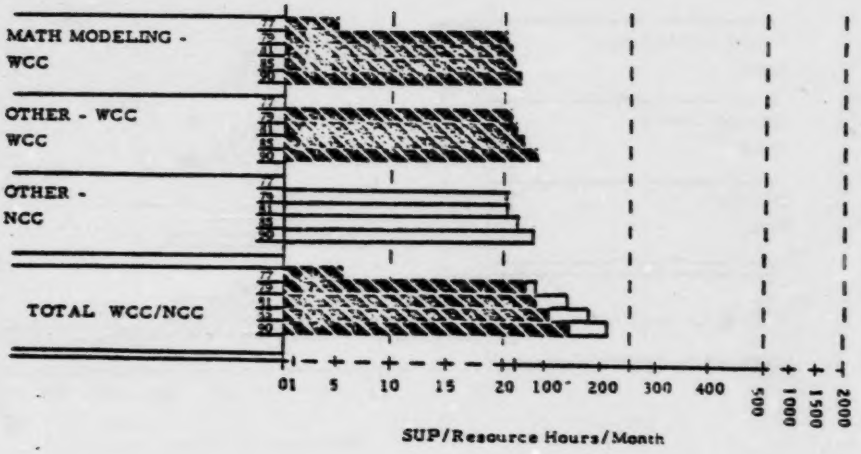


Figure 4-63.1. Office of Program Integration/Information (OTS) Projected Workload Scenario 3

B. Office of Pesticide Programs (OPP)

The projected growth rates for OPP under Scenario I shown in Figure 4-61.2 is gradual through 1979, increases during the 1979-1985 time periods, and then levels off somewhat in 1985-1990. In the near term, the Perticides Product Information System will experience steady limited growth. The Company Data System will complete developmental activity but workload decreases caused by this completion will be offset by increased requests for retrievals. Ecological monitoring will grow rapidly, largely due to increased studies relative to pesticides effects on humans (Hanes studies). Two major considerations in the near time frame could have an effect on subsequent workload. OPP is planning both the increased use of data base management packages and the conversion of virtually all workload to a minicomputer (PDP 11-70). If the latter comes to fruition, future timesharing workload would be decreased approximately 80 percent.

The Deputy Assistant Administrator for OPP could not be scheduled for an interview. Discussions with AA's on the general growth of programs showed that Pesticides was a difficult future to determine. Most felt that it would grow slightly faster than the traditional Air and Water programs. Some growth will occur in the 1979-1985 period because of the similarities of this program and the toxics area. However, in interviews with both the previous and current Assistant Administrator for OWHM, factors which will limit program growth were discussed. First, it was felt that in the Pesticides area more and more responsibility will shift to states. It was also stated that OPP workload would level off as the pesticide industry limits itself to fewer and fewer chemicals. Thus, a more limited growth is envisioned for the 1985-1990 time frame.

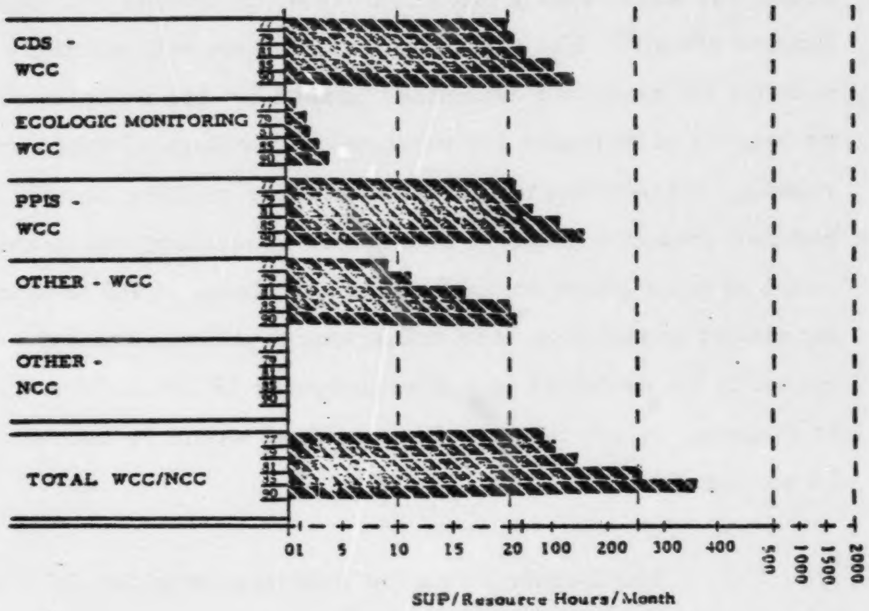


Figure 4-61.2. Office of Pesticide Programs (OTS) Projected Workload Scenario 1

Limited information was provided on alternate scenarios. In general, Scenario II (higher demand) would permit more pesticide effects research activities such as the Hanes projects. Existing data in all systems would be put to additional use (e.g., analyses, modeling). In Scenario III (reduced demand) decreases in levels of service (e.g., less frequent data base updates would transpire. The workload projections for these scenarios are shown in Figures 4-62.1 and 4-63.2.

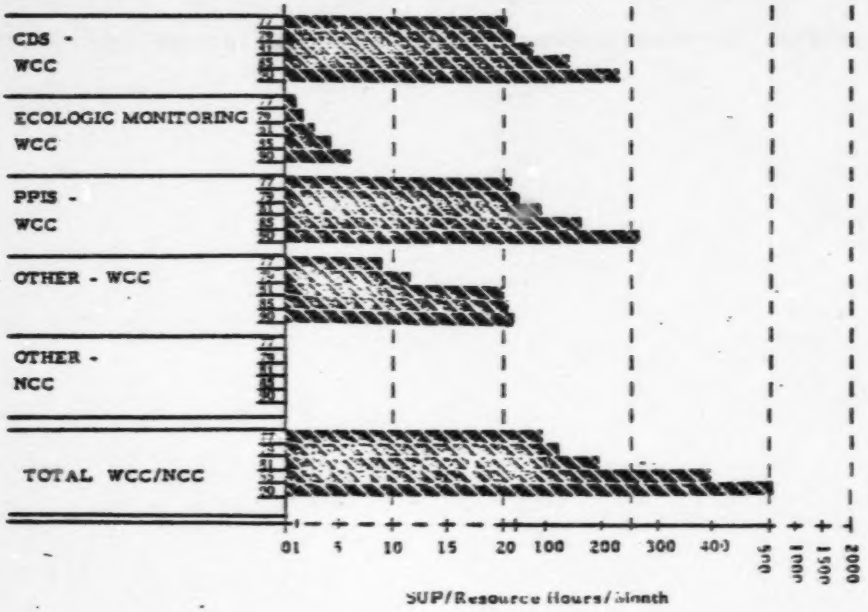


Figure 4-62.2. Office of Pesticide Programs (OTS) Projected Workload Scenario 2

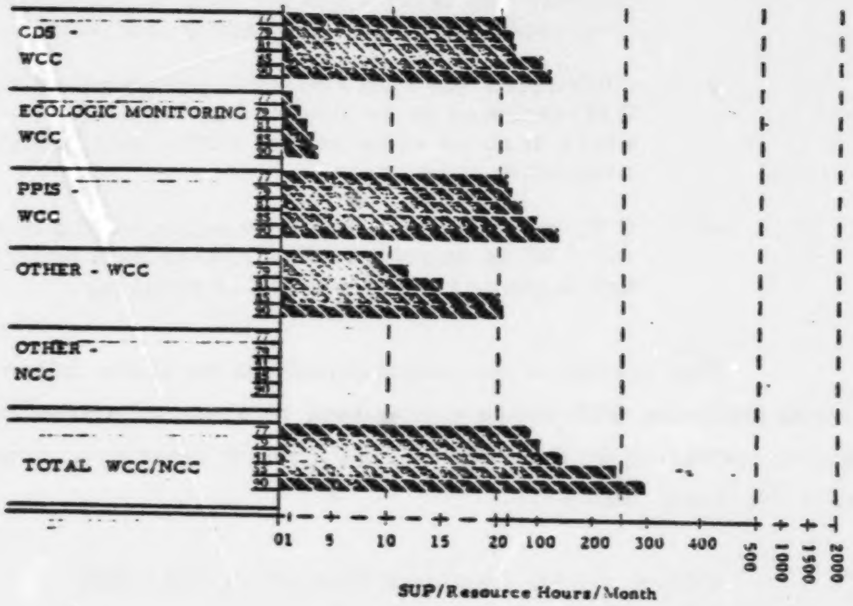


Figure 4-63.2. Office of Pesticide Programs (OTS) Projected Workload Scenario 3

4.4.7 Office of Research and Development (ORD)

Growth in ADP usage by ORD will be a continuing trend based on many factors derived during management and ADP activity surveys:

- The need for data which is sound, both scientifically and from a quality control standpoint is essential for EPA regulatory functions.
- ORD spans the range of EPA programs so that ORD is bound to be involved in high priority areas such as solid waste, toxics and energy programs.
- ORD management generally supports the need for ADP to support the increased data analysis and modeling tasks which are evolving.

The narrative discussions and charts in the following subsections describe ORD usage projections on a more detailed level. Charts illustrating ORD projected ADP growth rates are shown in Figures 4-64, 4-65, and 4-66.

A. Office of Air, Land and Water Use (OALWU)

The growth in ADP timesharing usage under Scenario I for OALWU is shown in Figure 4-67. The decrease in usage in the 1981 time frame is due to the planned termination of the RAPS System which currently uses a large amount of ADP resources. Growth will resume after this period as the newly developed State and Waste Water Treatment Data Base builds up. The highest growth rate occurs at MERL - Cincinnati, while usage at the other labs namely ESRL - RTP, ERL -Ada, and ERL - Athens will grow at a rate less than the overall EPA rate.

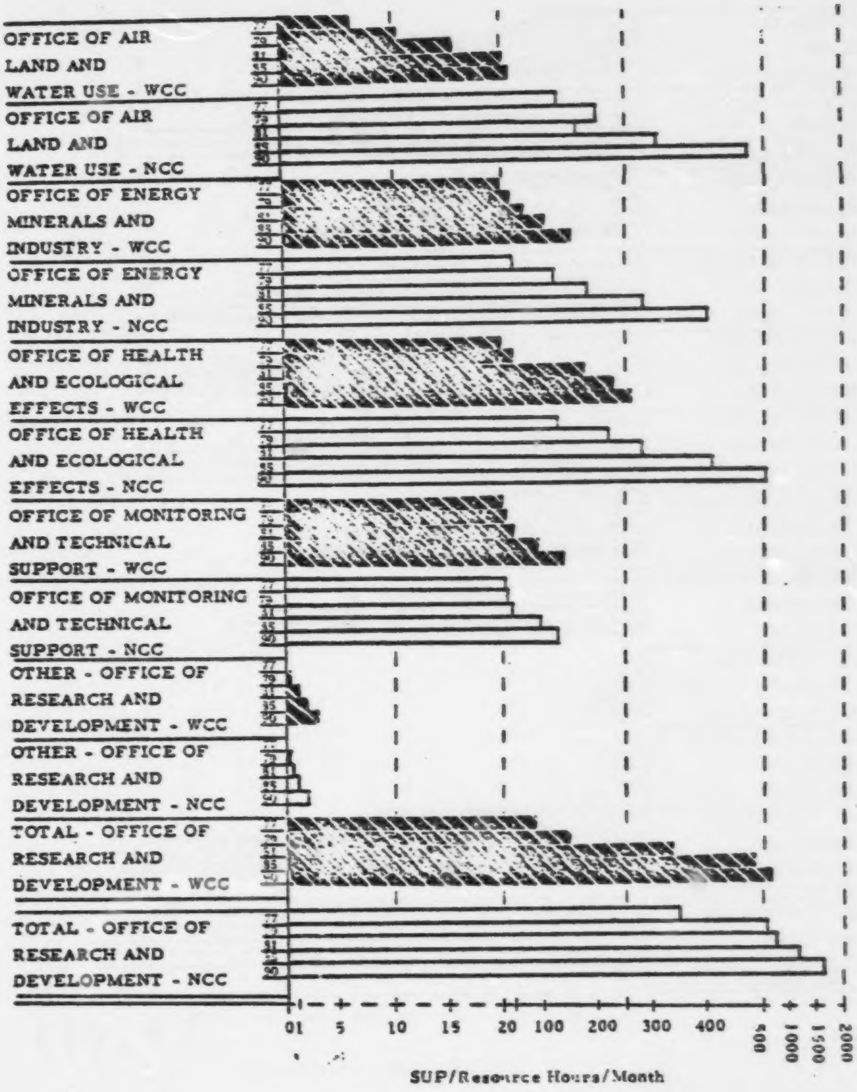


Figure 4-64. Office of Research and Development Projected Workload Scenario 1

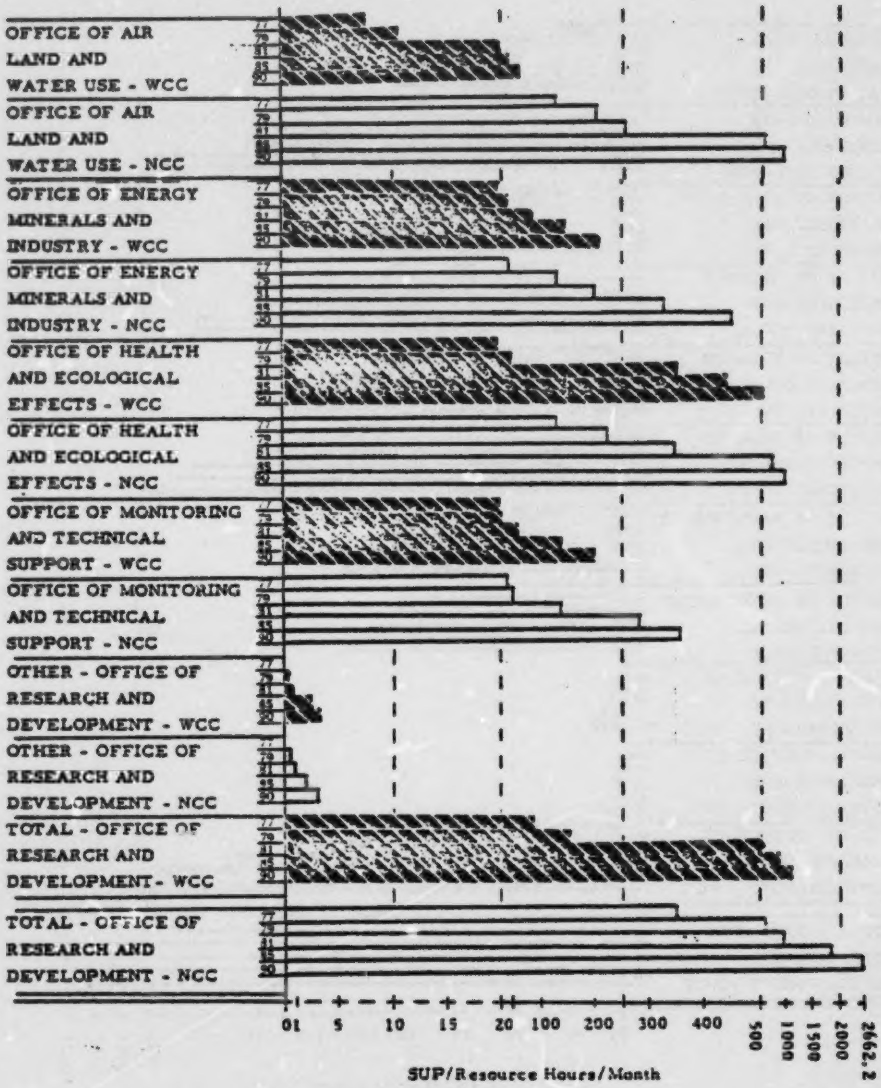


Figure 4-65. Office of Research and Development Projected Workload Scenario 2

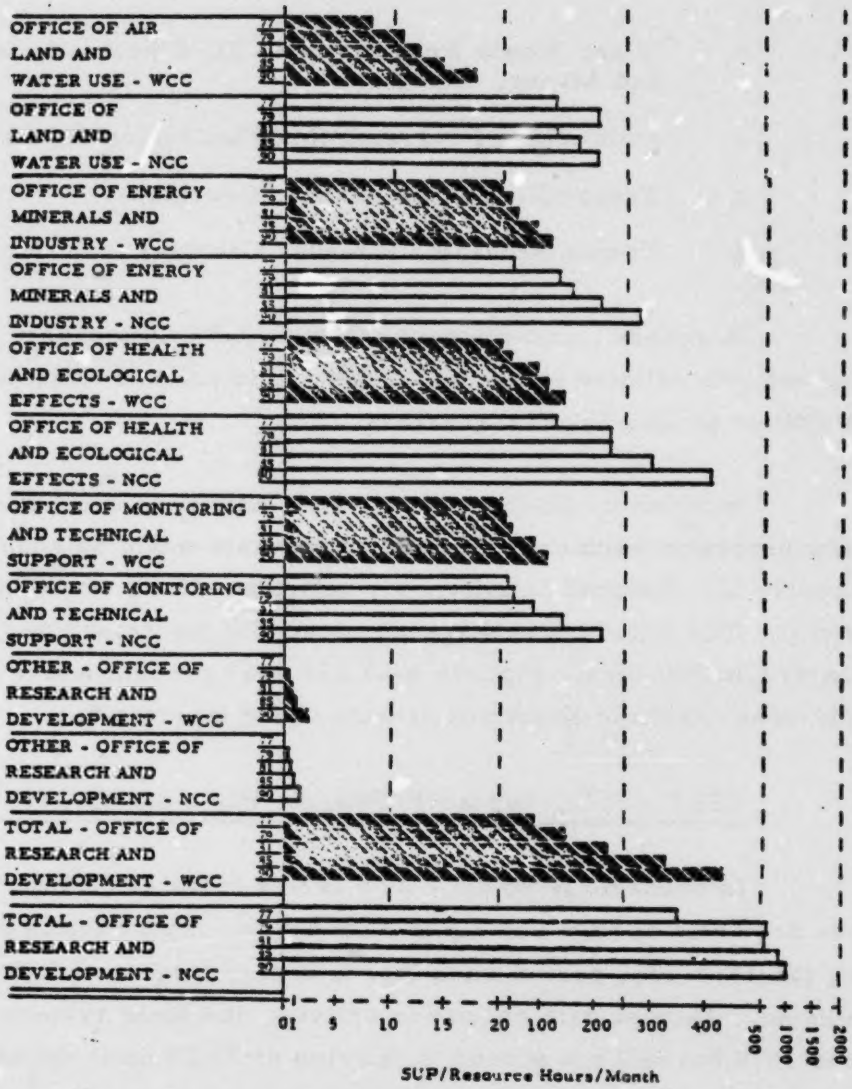


Figure 4-66. Office of Research and Development Projected Workload Scenario 3

This office supports more different types of programs than any other ORD office. Thus, some mission areas will experience growth as the associated programs are accelerated. Major examples are:

- Water Supply Programs (MERL-Cincinnati, Ohio and Athens, Georgia)
- Solid Waste Programs (MERL-Cincinnati, Ohio)
- Energy Programs (Athens, Georgia)
- Toxics Programs (Athens, Georgia)

In general, management within OALWU labs favors increases in ADP budgets relative to overall budgets; this attitude is somewhat more limited at OALWU Headquarters.

In Scenario II, (higher activity), activities supporting high priority programs such as toxics and solid waste would be accelerated. In Scenario III, (reduced activity), air pollution efforts would be reduced somewhat. The following paragraphs expand on the growth projections for major OALWU labs. Figures 4-68 and 4-69 present future ADP growth rates for these scenarios at each of the laboratories.

1. ESRL - RTP (Research Triangle Park, North Carolina)

In Scenario I, ESRL - RTP is one of the few EPA organizations projected to have any dip in ADP usage. This decline occurs during the 1979-1881 period when RAPS, a very large activity, is terminated. Another data collection activity, the State system, will start in 1979 but will not expand to the size of RAPS until the mid 1980s.

Activity will build up after the early 1980s and overall growth will resume. Laboratory management projected the ADP budgets will increase at a rate much higher than overall budget increases

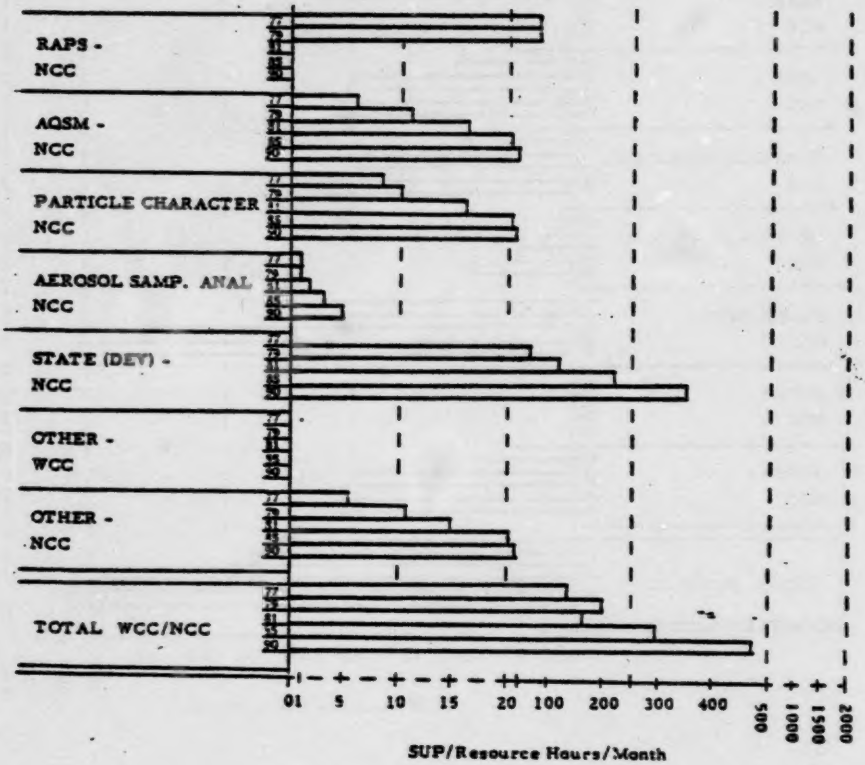


Figure 4-67.1. ESRL-RTP (OALWU) Projected Workload Scenario 1

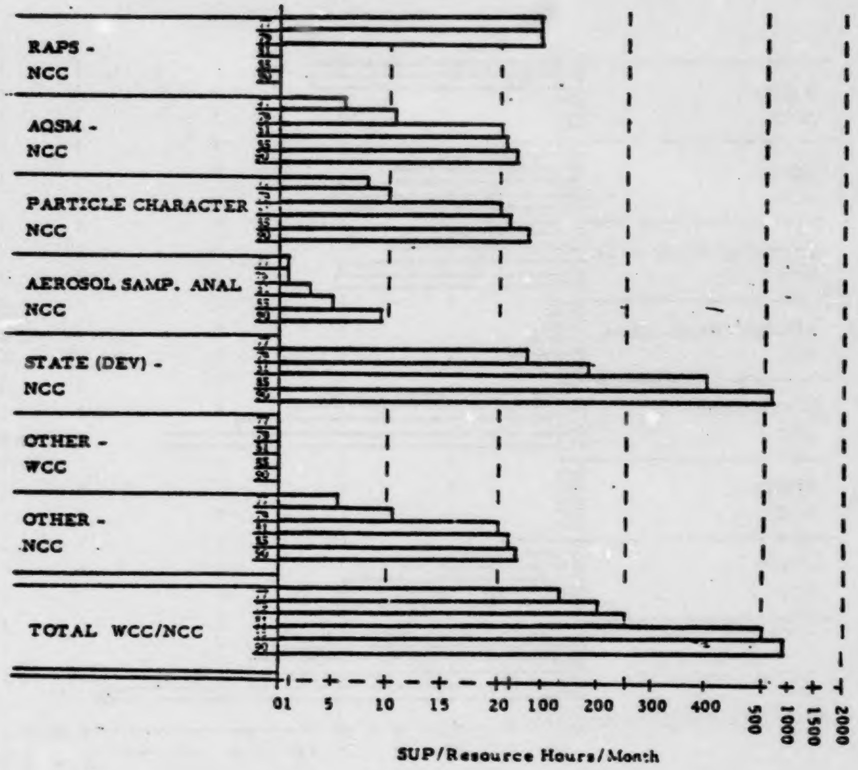


Figure 4-68.1. ESRL-RTP (OALWU) Projected Workload Scenario 2

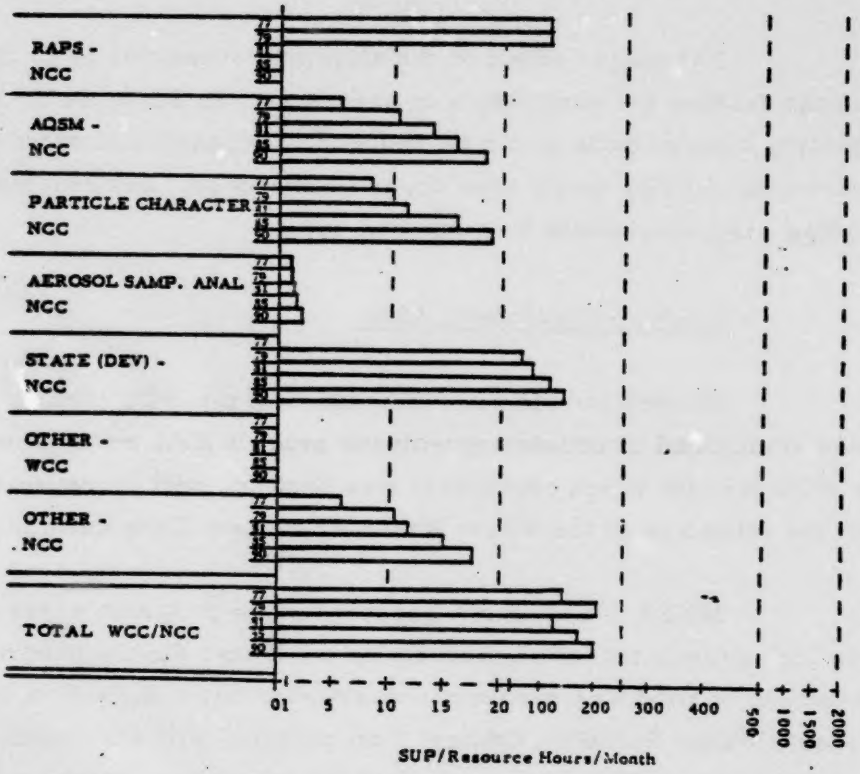


Figure 4-69.1. ESRL-RTP (OALWU) Projected Workload Scenario 3

due to ADP-intensive activities such as air pollution modeling and more immediate analyses of data collected (e. g., State data). However, this laboratory supports the Air Program, an area which most EPA management felt would have limited growth compared to high priority projects such as Toxics and Solid Waste. Hence, the overall growth rate for ADP usage will be somewhat constrained.

The major effect of the alternate scenarios is to change the time frames for completion of programs. In Scenario II, (higher activity), time periods would be reduced. Expansion of extra-mural contracting activity would also occur in this case. In Scenario III, existing programs would be stretched out.

2. MERL - Cincinnati, Ohio

Growth for MERL - Cincinnati at the NCC facility is relatively steady and is consistent with the overall EPA role. Usage at the WCC facility which previously was limited, will increase somewhat with the initiation of the Waste Water Treatment Data Base in 1979.

MERL - Cincinnati supports some program areas which have high growth potential, especially the Water Supply program. Involvement in solid and hazardous waste handling and Section 208 (Federal Water Pollution Control Act) planning will also require increased use of ADP. Management at the laboratory perceived an increased need for ADP in the future and growth in applications such as data analysis and modeling. One factor that could limit the use of EPA timesharing capabilities by this laboratory is the fact that users in the lab feel that past history of EPA timesharing facilities has been spotty. Local ADP facilities are utilized to the extent possible.

In Scenario II (higher activity), more long term research projects would be initiated and more in-house components would be involved. In Scenario III (reduced activity), ORD in-house research and supporting ADP activities would operate at restricted levels.

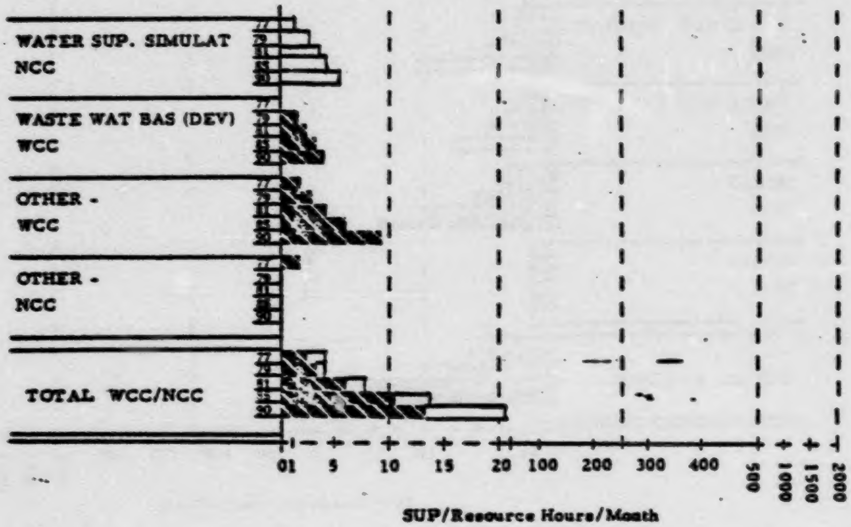


Figure 4-67.2. MERL-CIN (OALWU) Projected Workload
Scenario 1

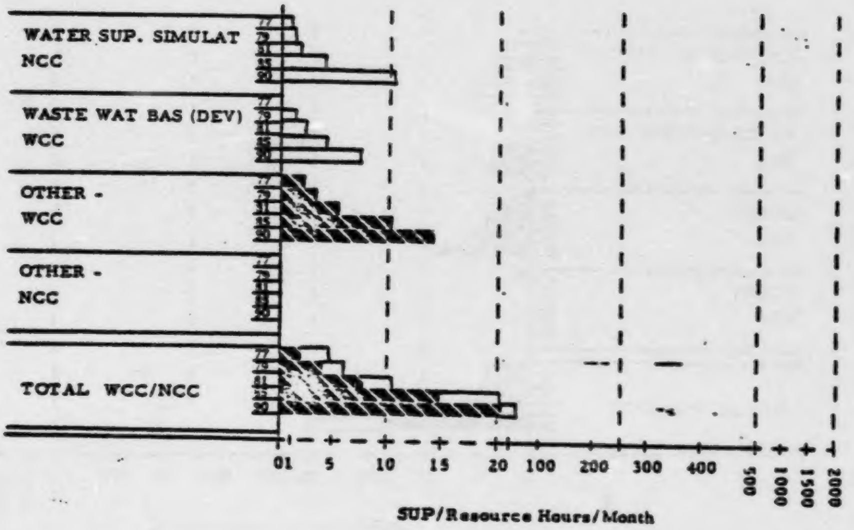


Figure 4-68.2. MERL-CIN (OALWU) Projected Workload
Scenario 2

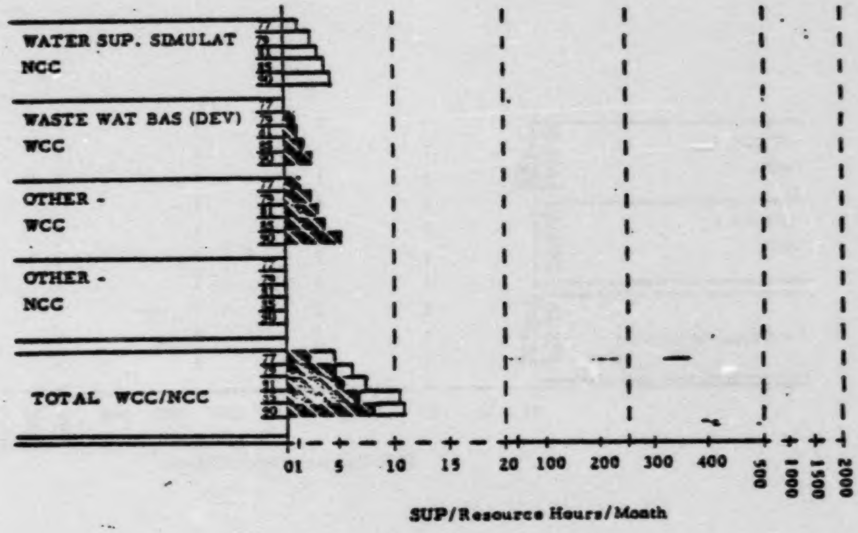


Figure 4-69.2. MERL-CIN (OALWU) Projected Workload
Scenario 3

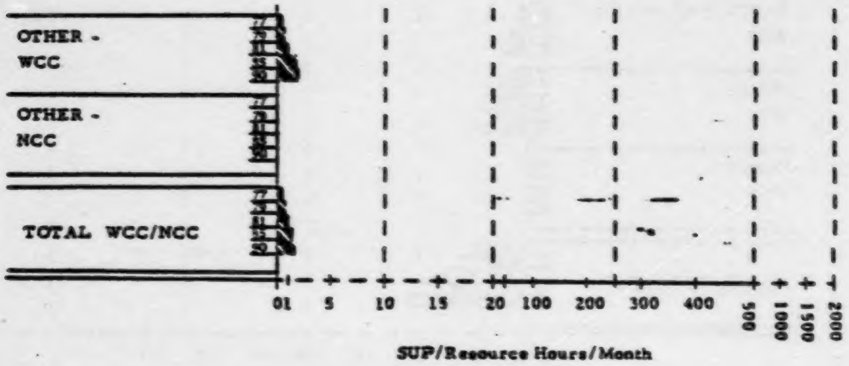


Figure 4-67.3. ERL-ADA (OALWU) Projected Workload
Scenario 1

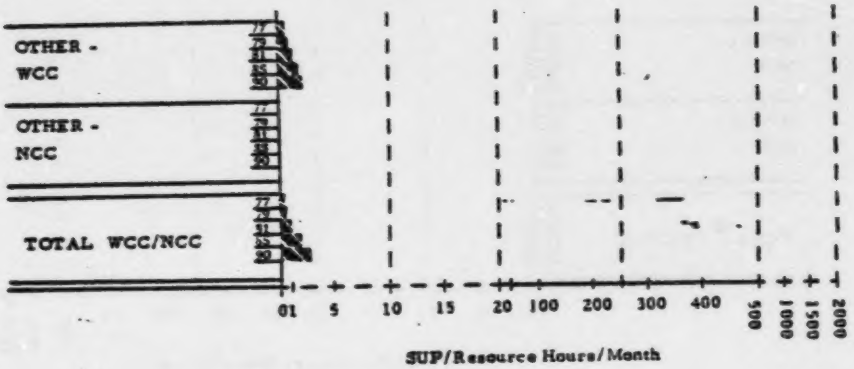


Figure 4-68.3. ERL-ADA (OALWU) Projected Workload
Scenario 2

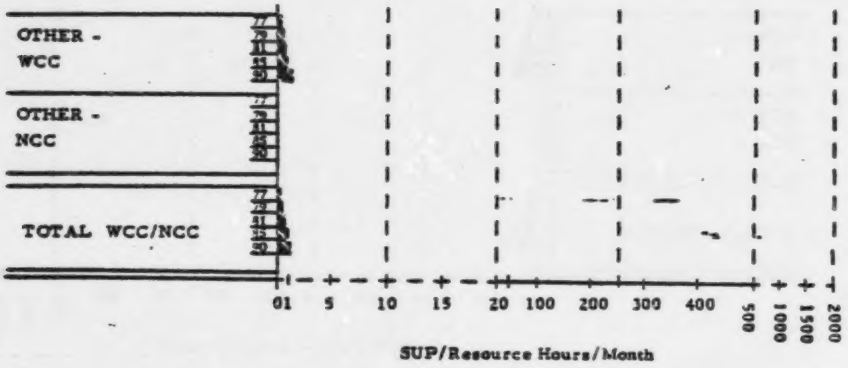


Figure 4-69.3. ERL-ADA (OALWU) Projected Workload
Scenario 3

3. ERL - Athens, Georgia

In Scenario I, growth in ADP usage at Athens increases slowly through 1979 and then grows more rapidly during the 1979-1990 time period. The accelerated growth starting in the early 1980s is due to the fact that several major missions performed by Athens will come to the forefront as the associated programs gain momentum. These missions include measurement methodology and transport/fate studies of energy related pollutants, drinking water contaminants, and toxic substances. All of these activities will require ADP support to perform sophisticated data analysis and modeling. Scenario II and higher activity levels would increase all program levels. Scenario III would slow the rate of growth in most projects.

B. Office of Energy, Minerals, and Industry (OEMI)

As shown in Figure 4-70 for Scenario I, the growth rate for ADP timesharing usage by OEMI exceeds the overall Agency rate. The overall high growth is driven by the energy orientation of this office and also by the extensive efforts conducted in impact analyses and technology assessments. Both the energy program and technology assessment operations were considered major thrusts by EPA management.

The accelerated early growth is caused by several factors:

- Growth in the technology assessment modeling activity performed at OEMI HQ
- Start of the Environmental Assessment Data System (EADS) activity at IERL-RTP (Research Triangle Park, North Carolina)
- Achievement of operational status by FPEIS and MIS activities at IERL-RTP (Research Triangle Park, North Carolina)

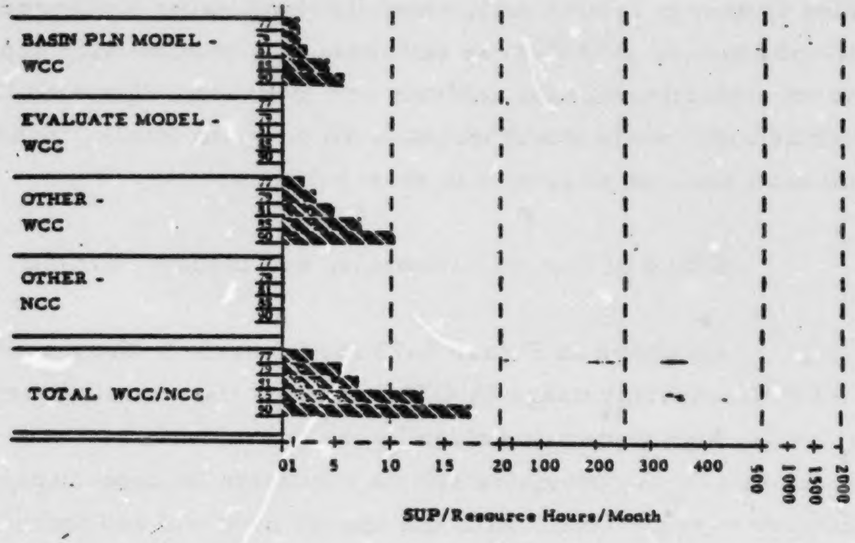


Figure 4-67.4. ERL-ATHENS (OALWU) Projected Workload
Scenario 1

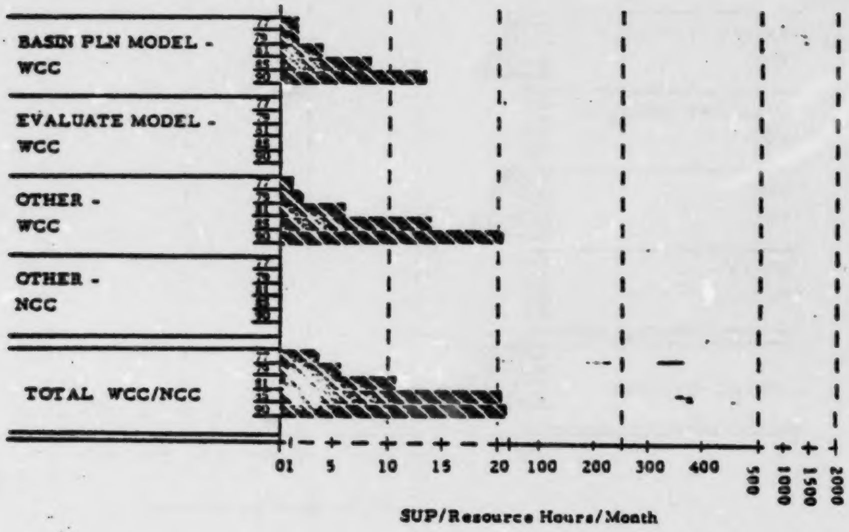


Figure 4-68.4. ERL-ATHENS (OALWU) Projected Workload
Scenario 2

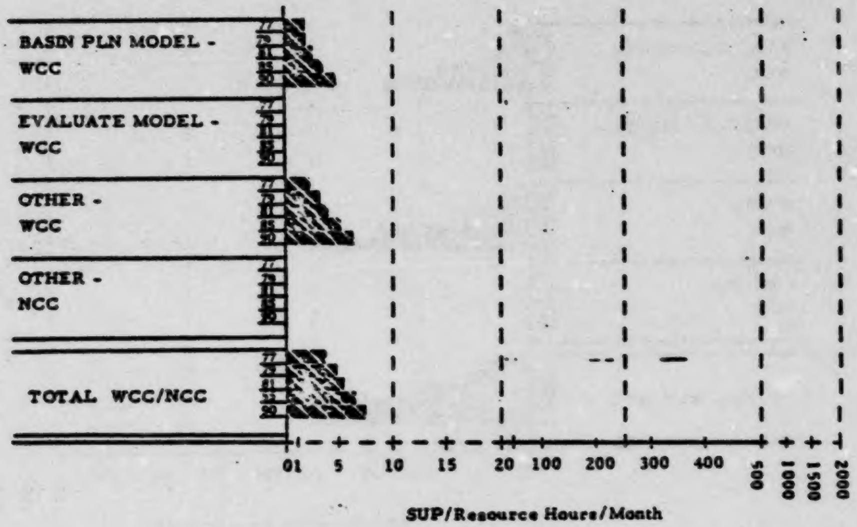


Figure 4-69.4. ERL-ATHENS (OALWU) Projected Workload
Scenario 3

Overall growth should be sustained both because of the importance of programs supported by OEMI and by the general tendency toward increased use of ADP shown by management at HQ and in the laboratories.

In Scenario II (higher activity), more long term research projects would be conducted, more personnel hired, and more emphasis placed on demonstrations of environmental control technology. In Scenario III (reduced activity), all ADP activity would be stretched out and marginal functions eliminated. The following paragraphs provide more detail on growth projections for OEMI labs. Figures 4-71 and 4-72 show the projected ADP growth rates for these scenarios.

1. IERL - RTP (Research Triangle Park, North Carolina)

The ADP usage at IERL - RTP under Scenario I shows heavy growth through 1979 followed by a lessened rate for the remaining years. The total growth rate exceeds the overall EPA rate.

The reason for the extreme early growth is that two systems currently being developed, namely the Fine Particle Emissions Information System and MIS, will become operational by late 1977 and will become more oriented toward data analysis and modeling. Another activity, the Environmental Assessment Data System (EADS) is currently under development and will become operational by 1979. This activity will support the technology assessments done at OEMI Headquarters and will aid in impact and cost benefit analyses. These type of analyses are considered a major EPA thrust as the Agency matures. The energy orientation of many activities in this laboratory will enhance long range growth. Further, laboratory managers showed a readiness to increase utilization of ADP even if it took a larger portion of the laboratory budget.

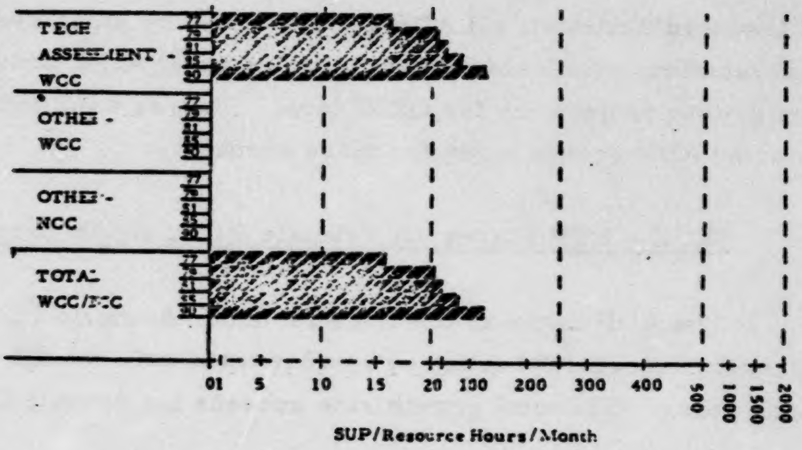


Figure 4-70.1. OEMI-HQ Projected Workload
Scenario 1

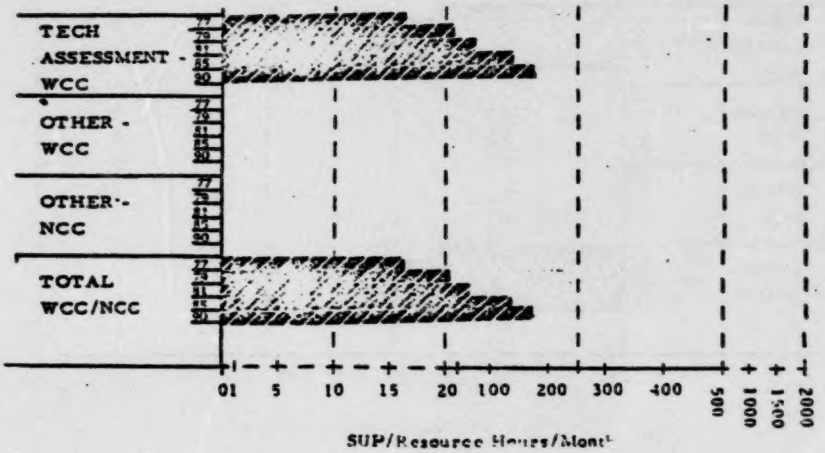


Figure 4-71.1. OEMI-HQ Projected Workload Scenario 2

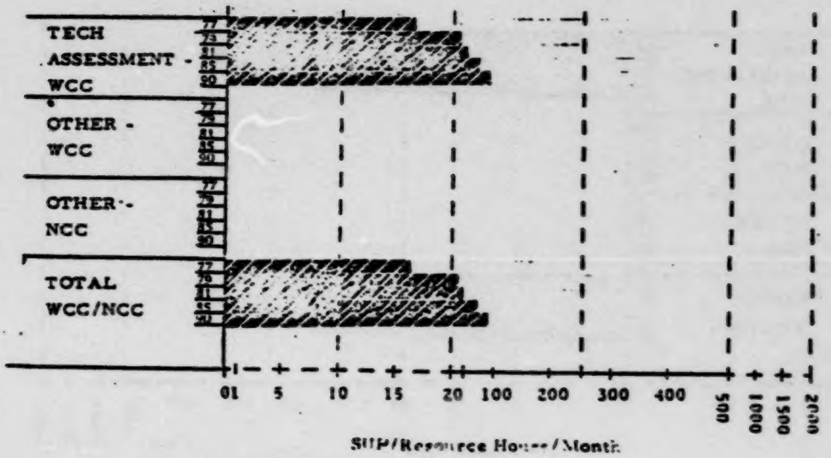


Figure 4-72.1. OEMI-HQ Projected Workload Scenario 3

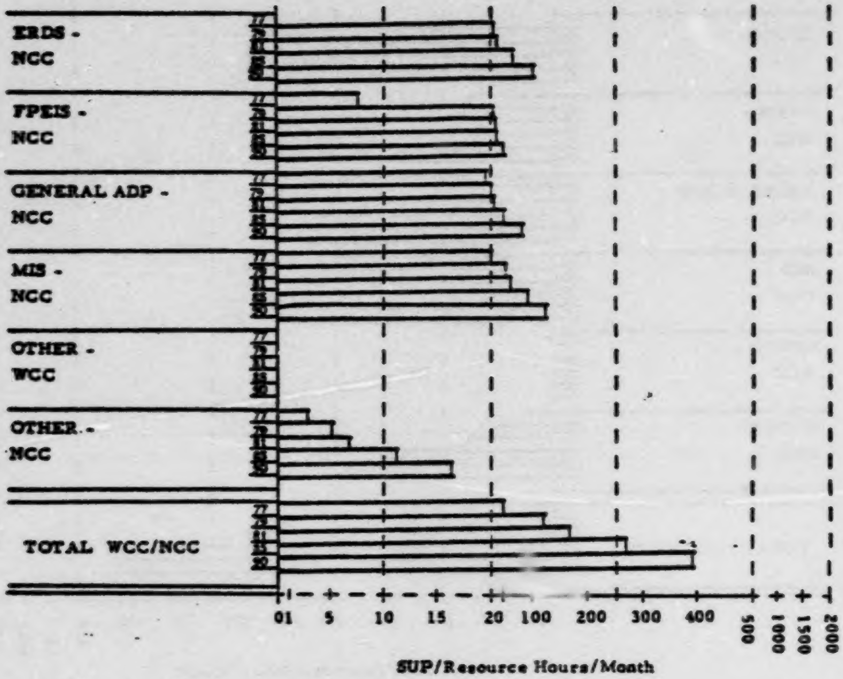


Figure 4-70.2. IERL-RTP (OEMI) Projected Workload
Scenario 1

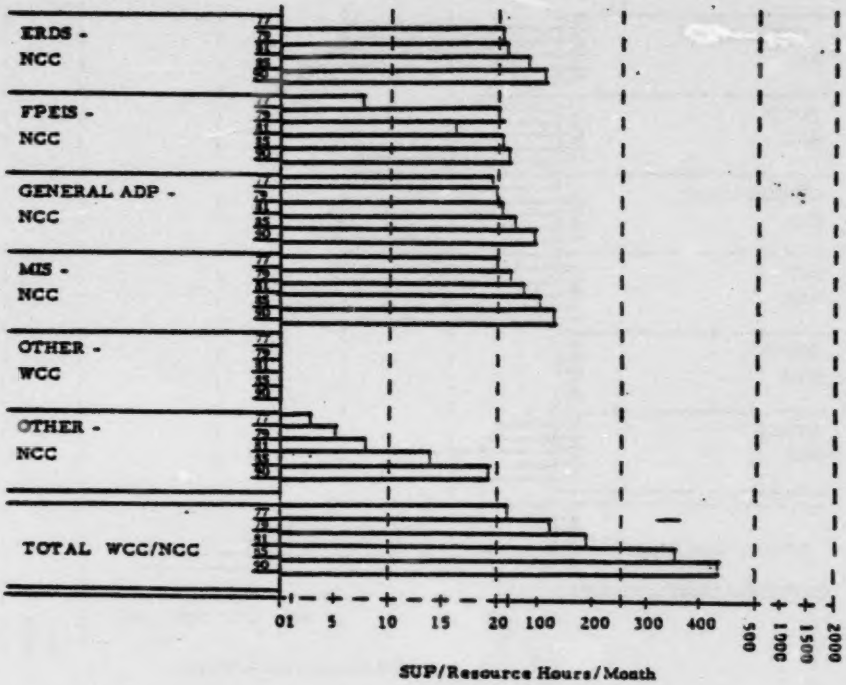


Figure 4-71.2. IERL-RTP (OEMI) Projected Workload
Scenario 2

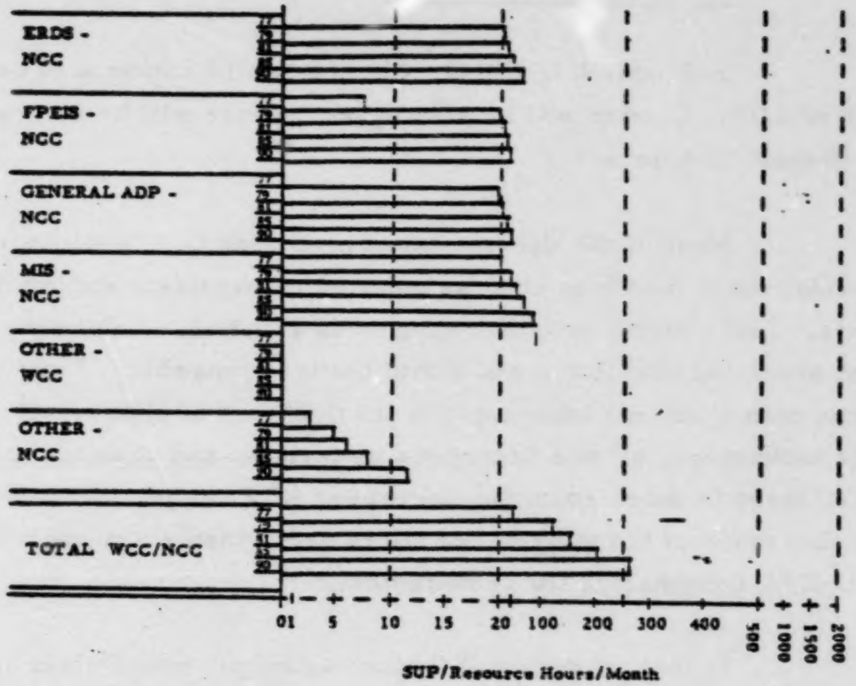


Figure 4-72.2. IERL-RTP (OEMI) Projected Workload
Scenario 3

In Scenario II (higher activity), additional dollars would largely be used to increase personnel. Scenario III (reduced activity), would result in a stretch out of existing programs.

2. IERL - Cincinnati, Ohio

In Scenario I, IERL - Cincinnati will continue to be a minor user of ADP. Growth will be steady but the rate will be no greater than the overall EPA rate.

Most of the current data processing at this lab is used for administrative functions such as position management and mailing labels. Little direct program support is supplied. Laboratory management predicted that this trend would change somewhat. Some of the programs with which the laboratory is involved are of high priority; namely fuels technology, oil and hazardous materials, and chemical products. Thus, there is much room for increased ADP usage. However, the fact that much of the work of the lab is performed extra-murally will limit EPA timesharing usage somewhat.

In fact, Scenario II (higher activity), would yield an increase in extra-mural activity and no significant additional growth in EPA timesharing usage. Scenario III (reduced activity), would result in decreased extra-mural activities.

C. Office of Health and Ecological Effects (OHEE)

Overall growth under Scenario I in ADP usage by OHEE (see Figure 4-73) is consistent with the overall EPA growth rate even though some individual components of OHEE have unusual growth patterns. Corvallis lab will have low growth in timesharing usage (and will actually have decreased use for a period) due to increased local processing with minicomputers. This is offset in other labs especially by

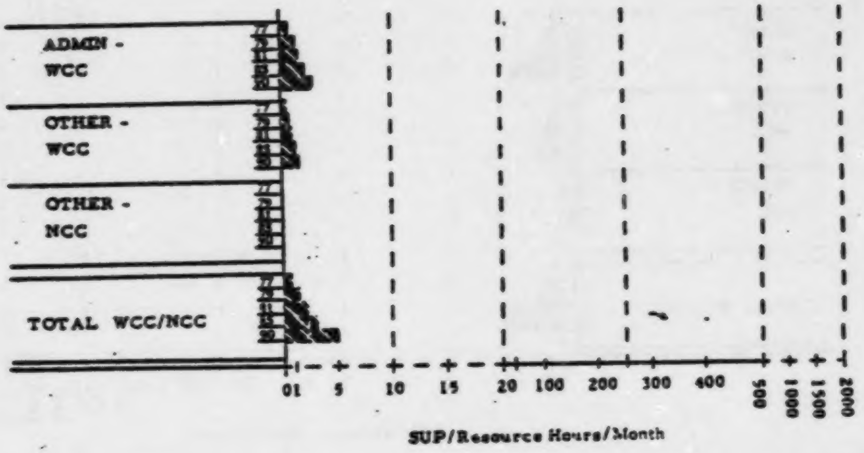


Figure 4-70.3. IERL-CIN (OEMI) Projected Workload
Scenario 1

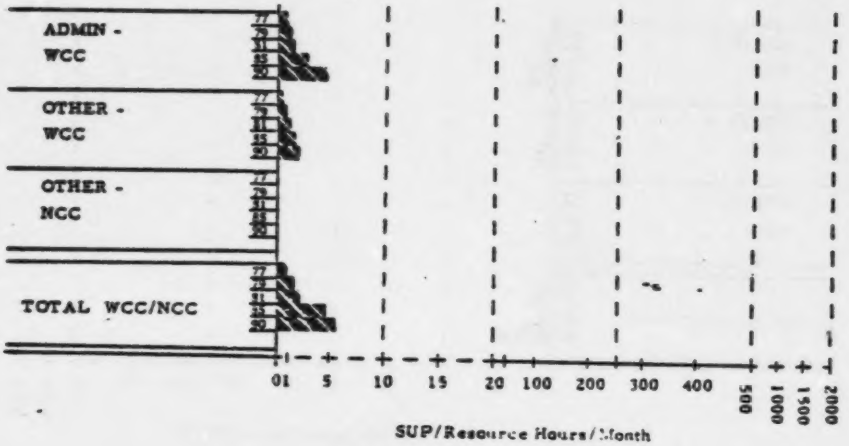


Figure 4-71.3. IERL-CIN (OEMI) Projected Workload Scenario 2

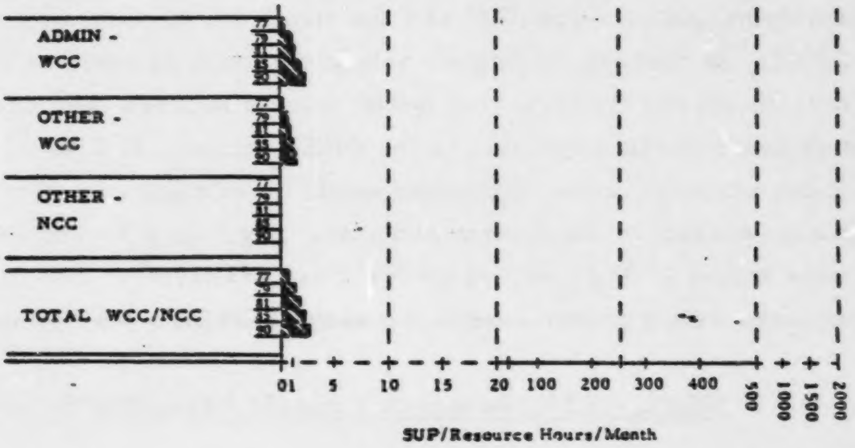


Figure 4-72.3. IERL-CIN (OEMI) Projected Workload
Scenario 3

growth at Grosse Ile due to increased legislative mandates dealing with the Great Lakes. The termination of the CHESS activity at HERL - RTP will be counteracted by growth in several systems including a CHESS replacement and a Pesticides Toxicology Activity. HERL - Cincinnati and the labs at Narragansett and Gulf Breeze (included in "Other") will continue to be lower volume users of ADP.

Continued growth is supported by management's generally favorable attitude toward ADP and the spectrum of programs supported by OHEE. In Scenario II (higher activity) growth depends on the stimulus; if increased concern over health effects happens then explosive growth could result since this is the OHEE thrust. In Scenario III (reduced activity), some programs would be eliminated and more emphasis placed on short term projects. Figures 4-74 and 4-75 illustrate future ADP growth rates for these scenarios. The following paragraphs detail growth trends for each of OHEE's major laboratories.

1. HERL - RTP (Research Triangle Park, North Carolina)

In Scenario I, HERL - RTP is one of the largest users on the NCC facility and ADP usage growth is expected. Growth through 1979 is expected to be especially high for the following reasons.

- Three activities, namely Aerometric Systems, Special Studies, and Physiological Studies are expected to have significant increases in data analysis and support of new requirements.
- The Pesiticides Toxicology activity should grow dramatically because it supports requirements of the Toxic Substances Control Act.
- While new Epidemiological Studies will expand and eventually allow for the phaseout of CHESS, both systems will operate concurrently during this period.

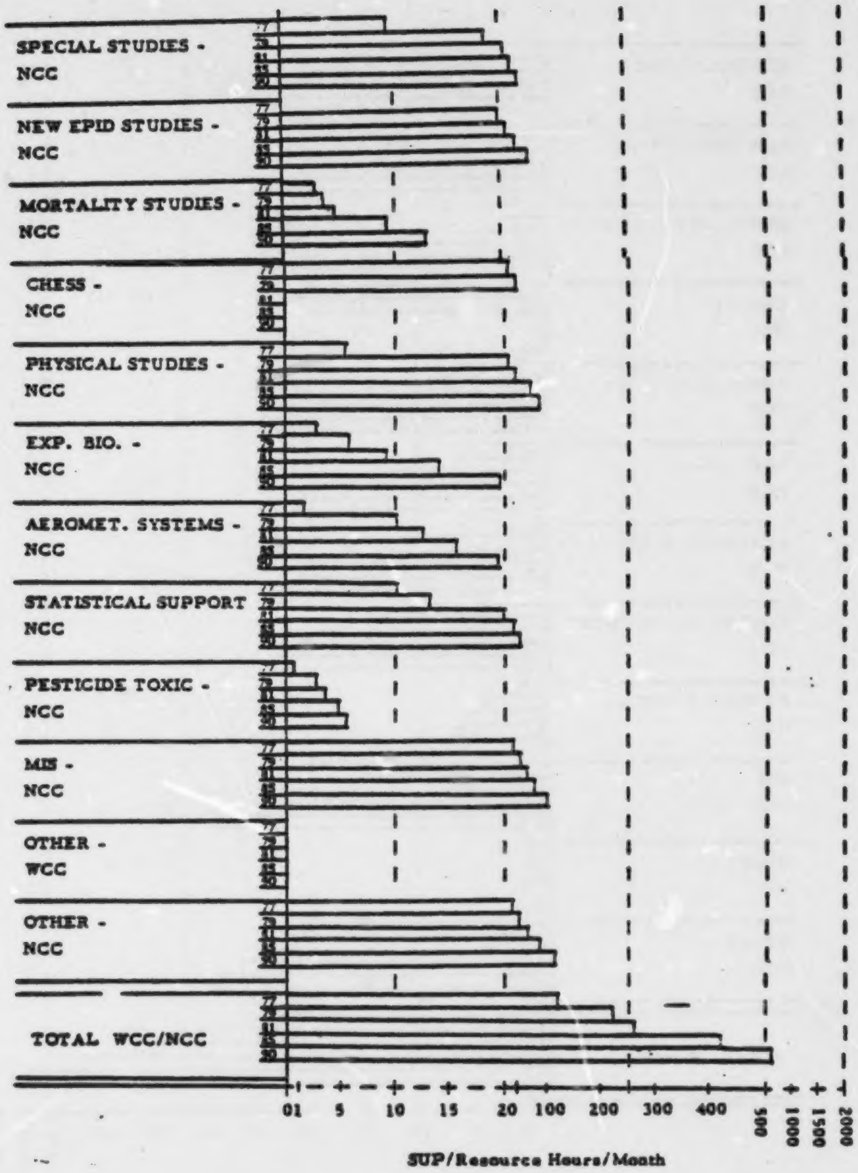


Figure 4-73.1. HERL-RTP (OHEE) Projected Workload Scenario 1

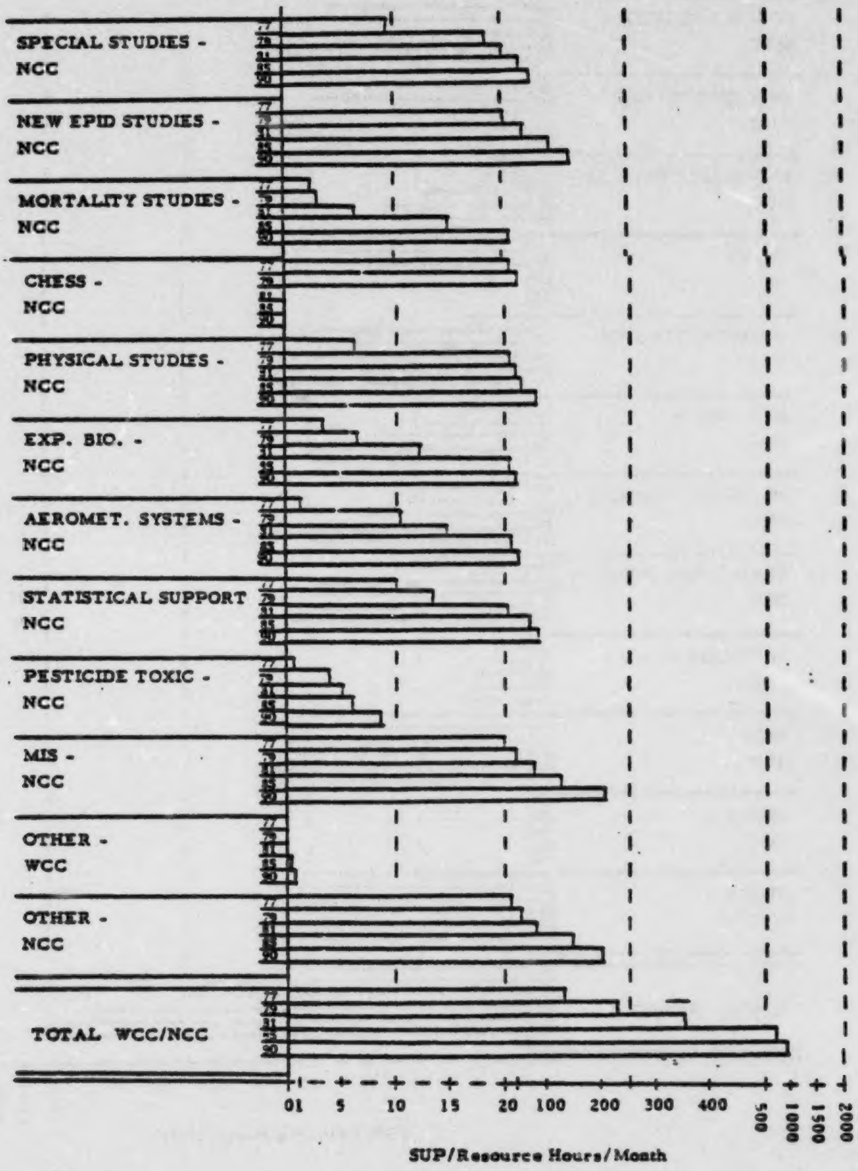


Figure 4-74.1. HERL-RTP (OHEE) Projected Workload
Scenario 2

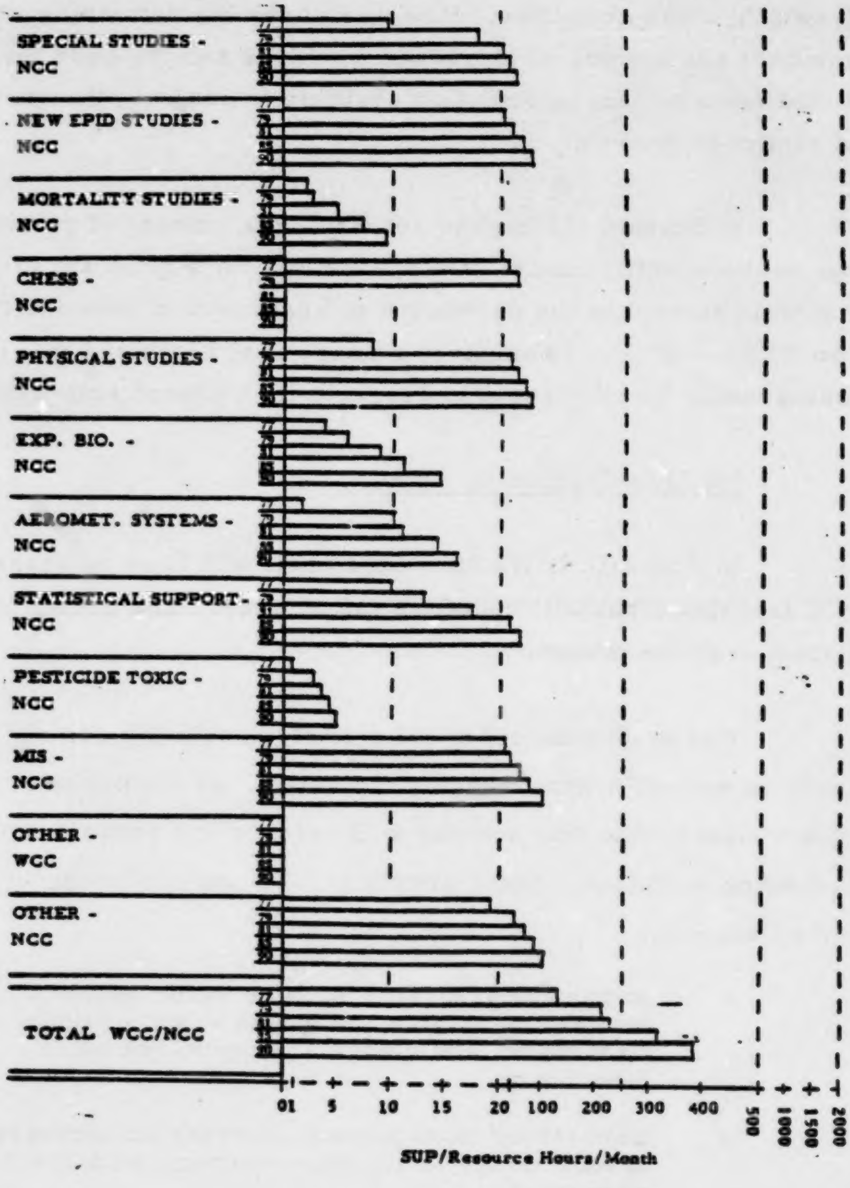


Figure 4-75.1. HERL-RTP (OHEE) Projected Workload Scenario 3

The termination of CHESS by 1980 will offset to an extent the growth in other activities. However, over the remaining years management projections of increased workload and the need for ADP supported management information systems to control this workload indicate continued growth.

In Scenario II (higher activity), the amount of growth will depend on the specific nature of the stimulus. A significant increase in programs related to the protection of health would have a direct impact on HERL - RTP. Laboratory management projected that no specific programs would be eliminated in Scenario III (reduced activity).

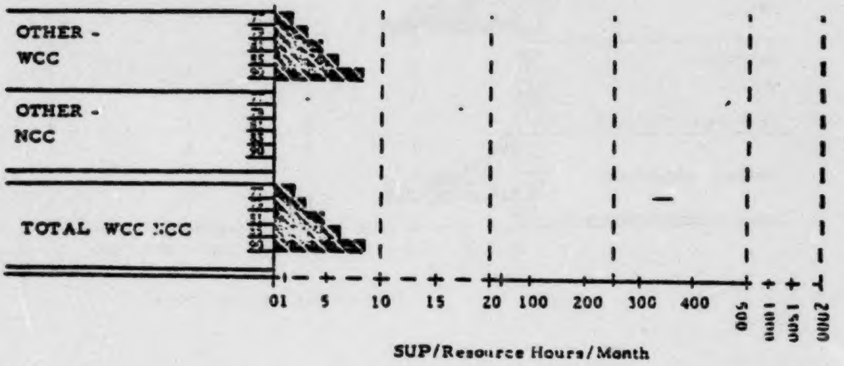
2. HERL - Cincinnati, Ohio

In Scenario I, HERL - Cincinnati will have increased usage of WCC facilities, but will remain a minor user. The growth rate is consistent over the period.

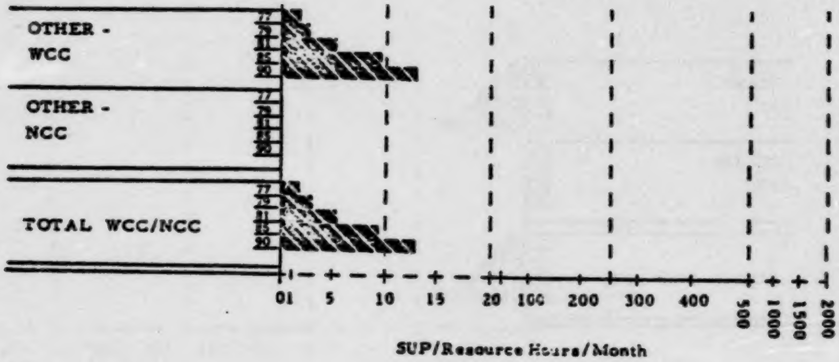
One major toxicological activity at this lab namely REEP, operates on non-EPA time-sharing facilities. At the present time, it is not anticipated that this activity will require any support from EPA time-sharing facilities. Some growth in EPA facility usage is still projected because:

- Important programs such as water supply contamination studies and health effects related to wastewater and sludge are conducted by this laboratory.
- Laboratory management foresees an increase in ADP usage to support programs with limited personnel.

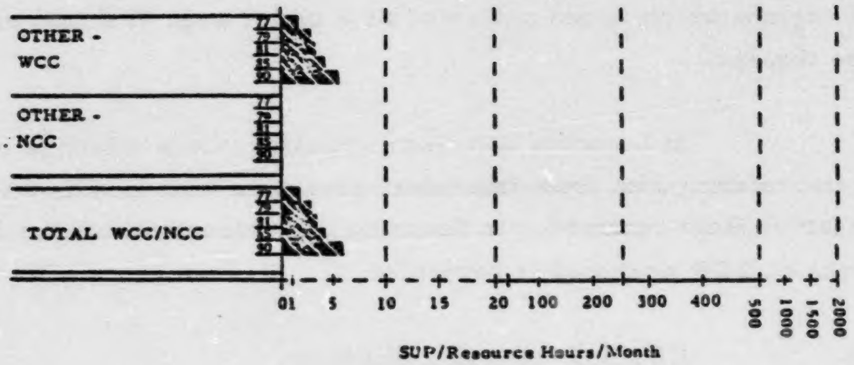
Scenarios II and III basically result in expansion or contraction of existing programs with no new activities foreseen in Scenario II and no terminations expected in Scenario III.



4-73.2 HERL - CINCINNATI (OHEE)
Projected Workload Scenario 1



4-74.2 HERL - CINCINNATI (OHEE)
Projected Workload Scenario 2



4-75.2 HERL - CINCINNATI (OHEE)
Projected Workload Scenario 3

3. ERL - Corvallis, Oregon

The workload projections under Scenario I for the Corvallis laboratory show a decrease in ADP usage in 1979 followed by subsequent limited increases. The short term decrease is due to the Corvallis plan to expand the use of local minicomputers and transfer some functions from the central ADP facility. Much of the ADP processing done by this laboratory is mathematical modeling. As these models become more complex, increased use of a more powerful central processor will be required. Hence, growth is projected for resumption starting in the 1979-1981 time period. These models generally support the Water Program which is not projected as a major area of thrust so growth will be limited.

In Scenario II (higher activity), there would be a growth in interrelating data from individual programs with resultant increased ADP support required. In Scenario III (reduced activity) a limited effect on ADP workload is projected.

4. ERL - Grosse Ile, Michigan

ERL - Grosse Ile has one of the highest projected ADP growth rates in the Agency under Scenario I. The basis for this growth is the high probability of passage associated with the Nelson Bill concerning Great Lakes water quality which would increase Grosse Ile budget by 300 - 500%. The optimism associated with this bill was presented during EPA headquarters interviews as well as in discussions with Grosse Ile personnel.

Much of the data processing within this laboratory is associated with modeling and data analysis. During the early through mid 1980's, increased usage of STORET at the WCC facility will accelerate growth at that location.

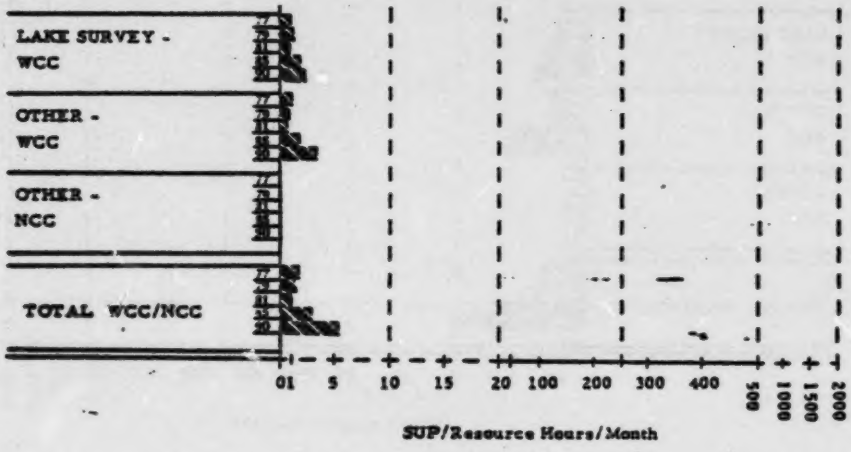


Figure 4-73.3. ERL-CORVALLIS (OHEE) Projected Workload Scenario 1

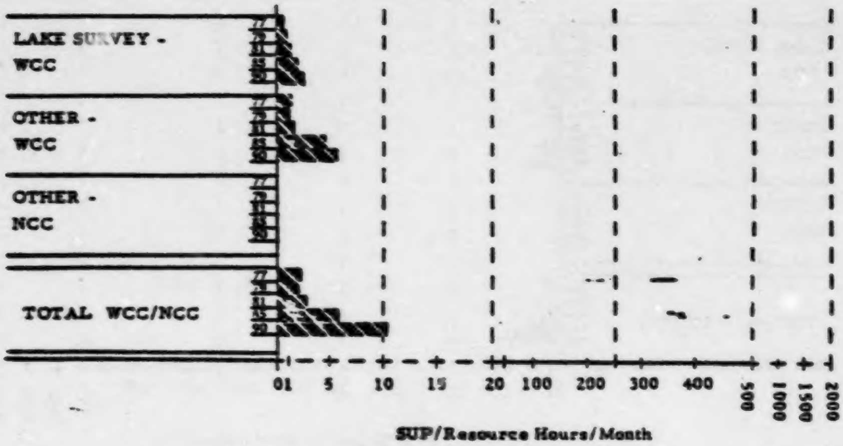


Figure 4-74.3. ERL-CORVALLIS (OHEE) Projected Workload
Scenario 2

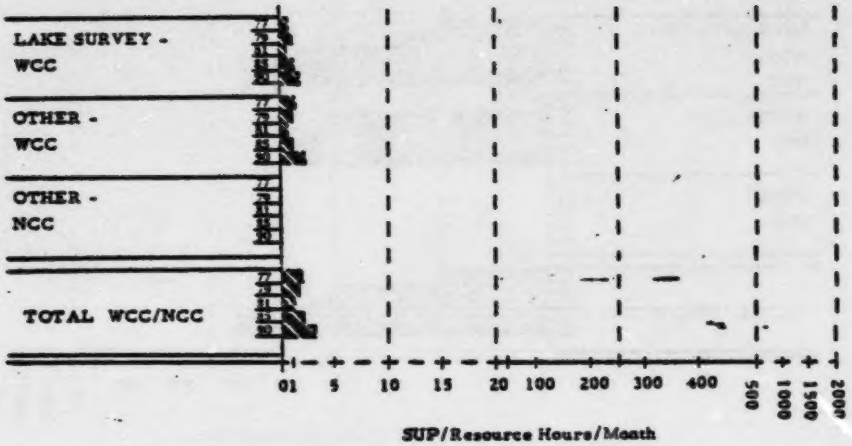


Figure 4-75.3. ERL-CORVALLIS (OHEE) Projected Workload Scenario 3

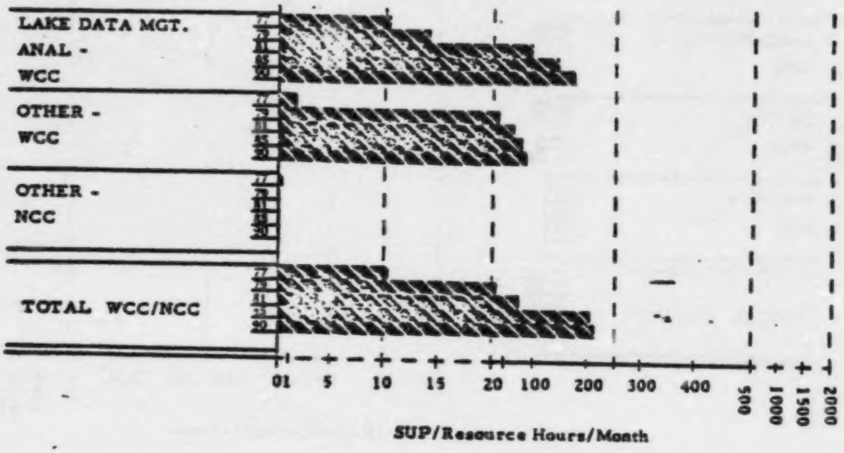


Figure 4-73.4. ERL-GROSSE ILE (OHEE) Projected Workload Scenario 1

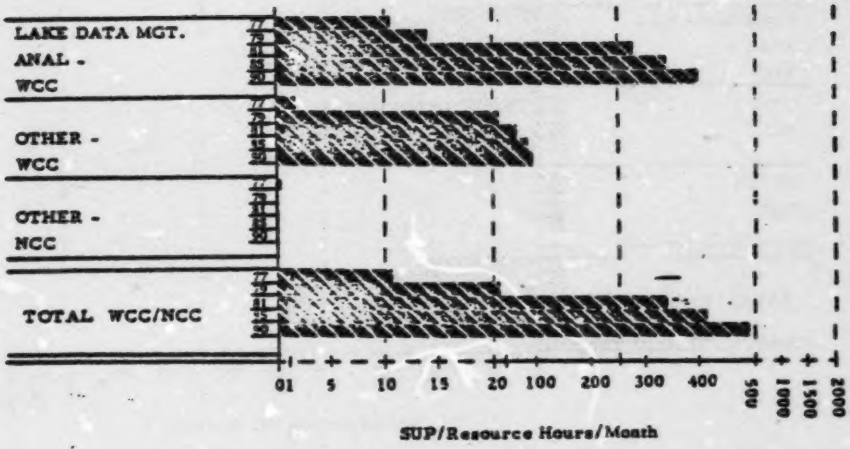


Figure 4-74.4. ERL-GROSSE ILE (OHEE) Projected Workload
Scenario 2

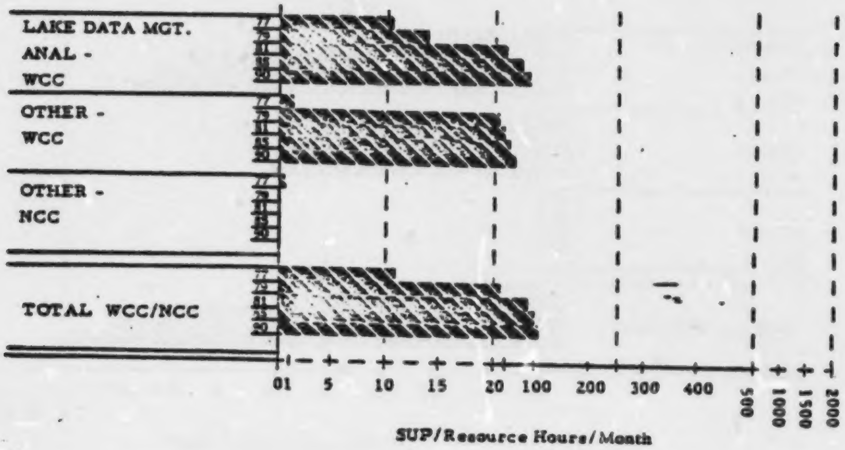


Figure 4-75.4. ERL-GROSSE ILE (OHEE) Projected Workload
Scenario 3

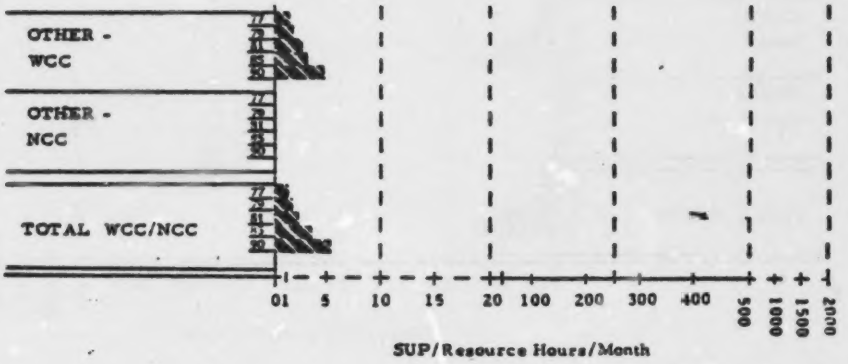


Figure 4-73.5. ERL-NARRAGANSETT (OHEE) Projected Workload Scenario 1

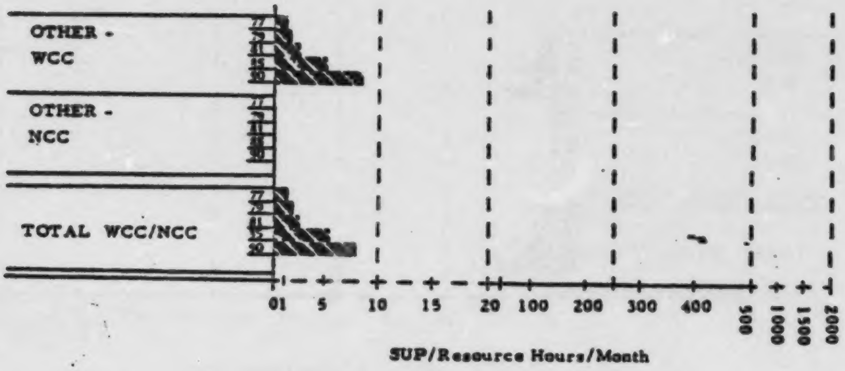


Figure 4-74.5. ERL-NARRAGANSETT (OHEE) Projected Workload
Scenario 2

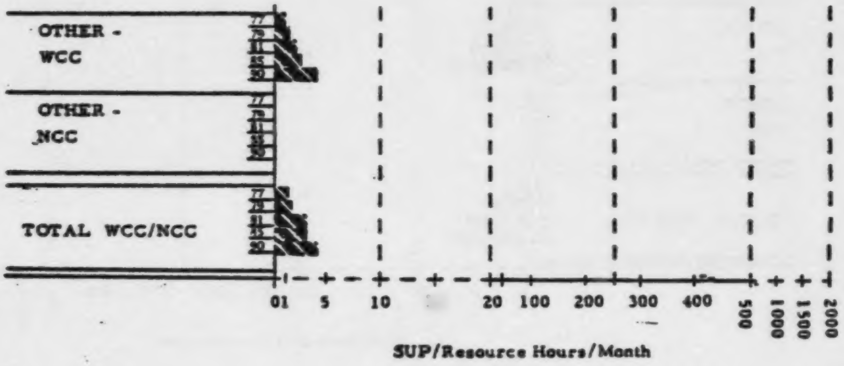


Figure 4-75.5. ERL-NARRAGANSETT (OHEE) Projected Workload Scenario 3

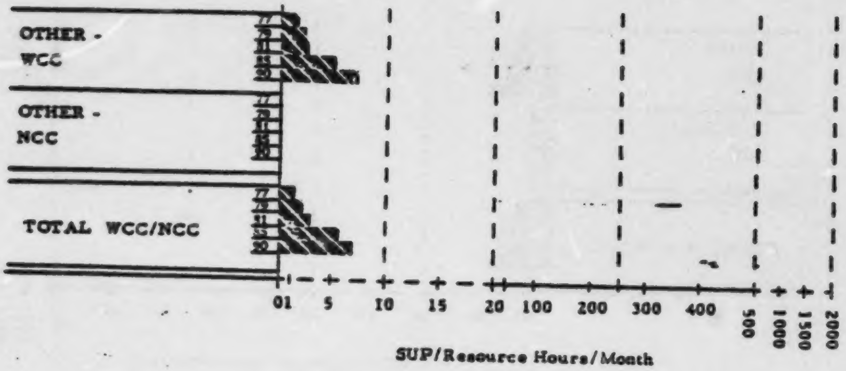


Figure 4-73.6. ERL-GULF BREEZE (OHEE) Projected Workload
Scenario 1

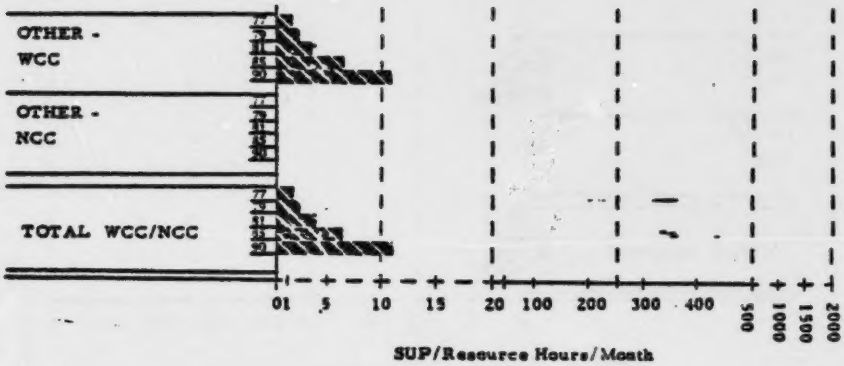


Figure 4-74.6. ERL-GULF BREEZE (OHEE) Projected Workload Scenario 2

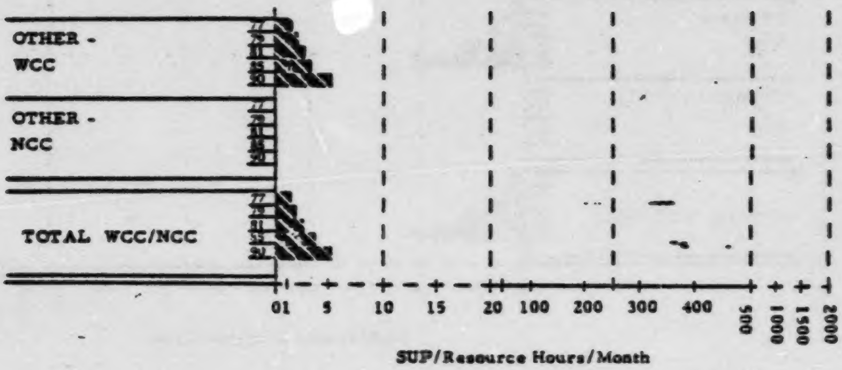


Figure 4-75.6. ERL-GULF BREEZE (OHEE) Projected Workload
Scenario 3

Scenario II (higher activity), is basically the case in which the most optimistic versions of the Nelson Bill passed. This would increase activity across all programs. Scenario III and reduced activity results in less spectacular growth.

D. Office of Monitoring and Technical Support (OMTS)

As shown in Figure 4-76 for Scenario I, OMTS is expected to have the highest growth in ADP usage within ORD. A portion of this growth can be attributed to the implementation and expansion planned for the BIOSTORET system. However, OMTS is projected for growth for several other reasons:

- Programs conducted by OMTS in quality assurance, impact assessments and evaluation criteria for defensible data will be emphasized as the Agency matures.
- Management perceives the need for greatly increased ADP support to handle increased data analysis efforts.
- Involvement in toxics monitoring implies considerable growth.

In Scenario II (higher demand), all of the priority programs discussed above would experience budget increases. In Scenario III (reduced demand), across the board cuts would be experience. Figures 4-77 and 4-78 show the projected ADP growth rates for these scenarios. The following paragraphs elaborate on growth factors for the OMTS laboratories.

1. EMSL - RTP (Research Triangle Park, North Carolina)

In Scenario I, ADP usage will grow rapidly at EMSL - RTP

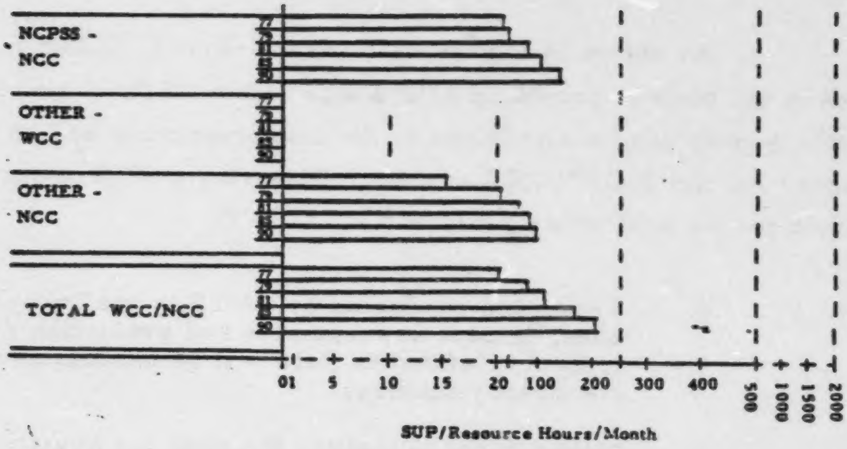


Figure 4-76.1. EMSL-RTP (OMTS) Projected Workload
Scenario 1

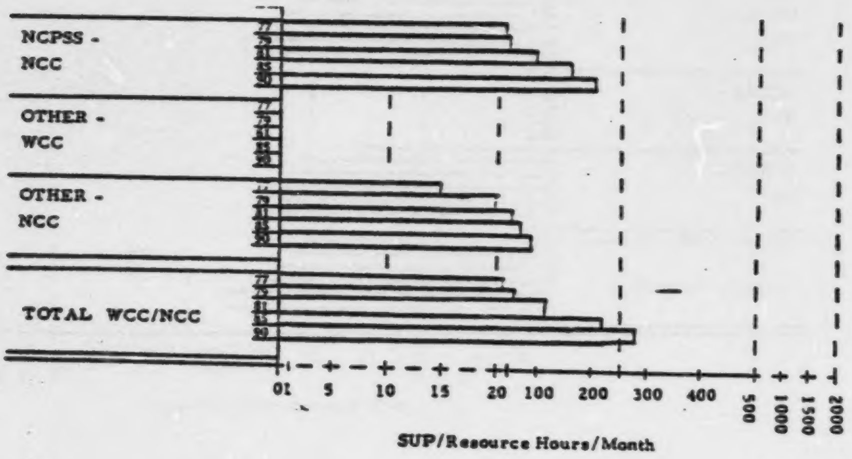


Figure 4-77.1. EMSL-RTP (OMTS) Projected Workload
Scenario 2

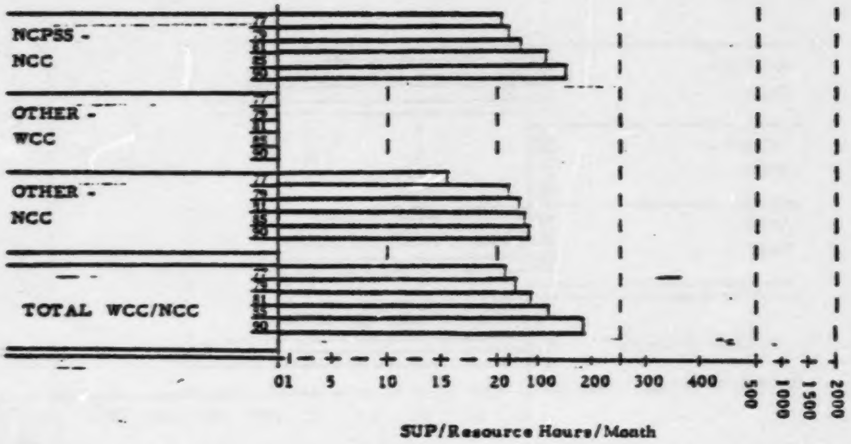


Figure 4-78.1. EMSL-RTP (OMTS) Projected Workload
Scenario 3

through 1981 and then continue to expand at a diminished rate. The early growth is based on management projections that the use of ADP will be two or three times the current level over the next 5 to 10 years and that a mix of centralized and local processing is essential. Data collection, management and analysis were all envisioned as greatly increasing applications.

From a program standpoint, laboratory management felt that the environmental monitoring support function with which EMSL - RTP is involved will grow as the Agency seeks improved quality assurance. In addition, this laboratory could grow considerably based on responsibilities for air pollution monitoring of toxic substances.

In Scenario II and higher activity levels, quality assurance programs would increase significantly as would support to toxic substances, and technical assistance programs. Scenario III and reduced activity levels would result in general overall reduction of programs with contract support activity being drastically reduced or terminated.

2. EMSL - Cincinnati, Ohio

EMSL - Cincinnati will have a relatively moderate but steady ADP growth in Scenario I. Limited expansion will be caused by the fact that the BIOSTORET activity will become operational during this time. BIOSTORET will support storage and retrieval of biological data and will be used by Regions and States. However, most of the ADP support for this activity will be provided by the Office of Water Planning and Standards at EPA HQ (see Section 4.4.4B).

Expansion is expected for those activities which support quality assurance (QA) of data stored for future analysis since QA is becoming more critical in EPA regulatory and enforcement operations. In general, the use of ADP at this laboratory is expected to grow in

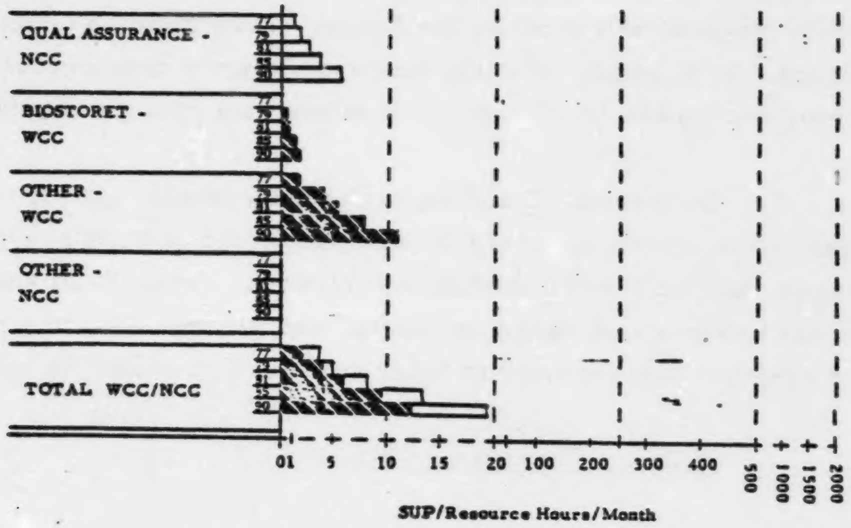


Figure 4-76.2. EMSL-CIN (OMTS) Projected Workload
Scenario 1

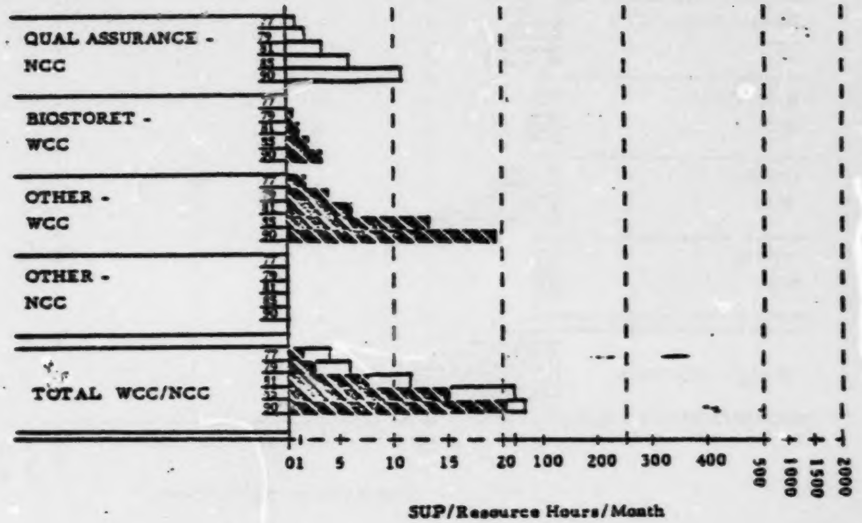


Figure 4-77.2. EMSL-CIN (OMTS) Projected Workload
Scenario 2

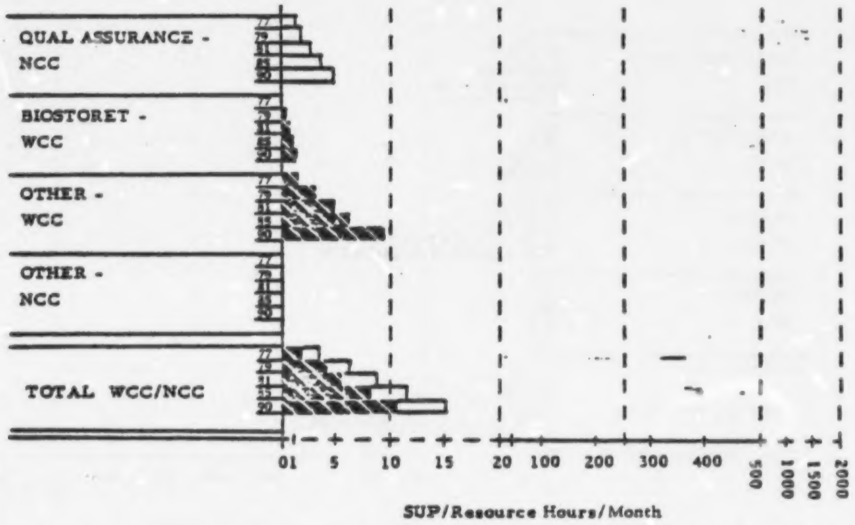


Figure 4-78.2. EMSL-CIN (OMTS) Projected Workload Scenario 3

order to compensate for personnel shortages. Laboratory management perceived a continued need for a combination of centralized and local ADP processing.

In Scenario II (higher activity), missions would remain unchanged but project schedules would be accelerated. In Scenario III (reduced activity), laboratory management predicted that a great deal of the cut to EPA could be expected in the laboratories during economically austere times.

3. EMSL - Las Vegas, Nevada

In Scenario I, ADP usage at EMSL - Las Vegas is projected to grow slightly faster than the overall EPA rate. The management at this laboratory felt that previous budget limitations had hindered the necessary use of ADP in support of missions. Increased ADP usage was seen as essential in supporting increased laboratory workload.

From a program/mission standpoint, EMSL - Las Vegas is involved in two activities which are high on the overall Agency priorities list. The first is impact assessments associated with energy development and the second deals with the development of evaluation criteria for acquisition of scientifically and legally defensible environmental data. The need for ADP support of these missions indicates continued ADP usage growth.

In Scenario II and higher activity levels, ADP was seen as a major area in which increased dollars would be spent. Even in Scenario III and reduced activity levels, laboratory management projected that ADP support would increase.

4.4.8 Staff Offices

Growth rate projections under Scenario I for ADP timesharing usage by the Staff Offices are shown in Figure 4-79. The rate

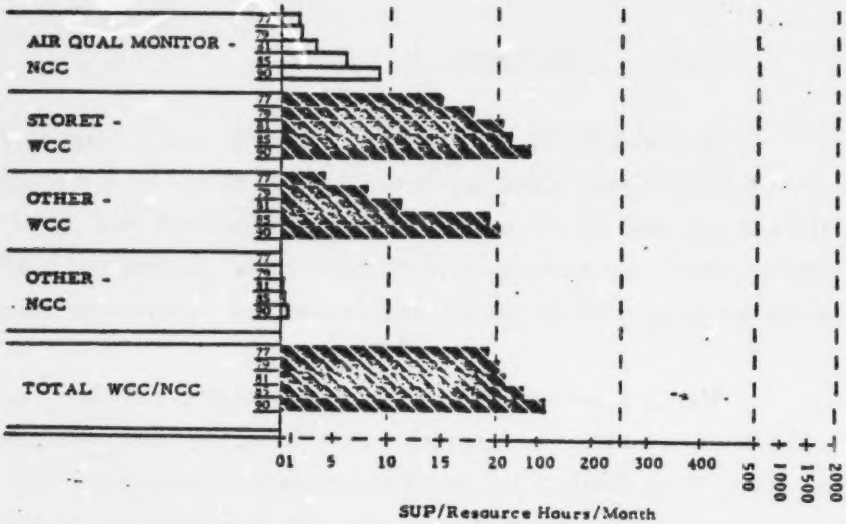


Figure 4-76.3. EMSL-LAS VEGAS Projected Workload
Scenario 1

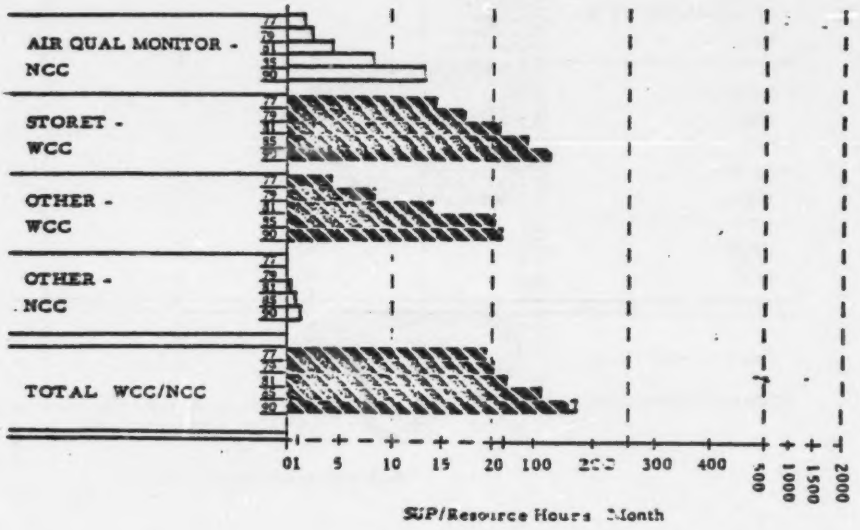


Figure 4-77.3. EMSL-LAS VEGAS Projected Workload Scenario 2

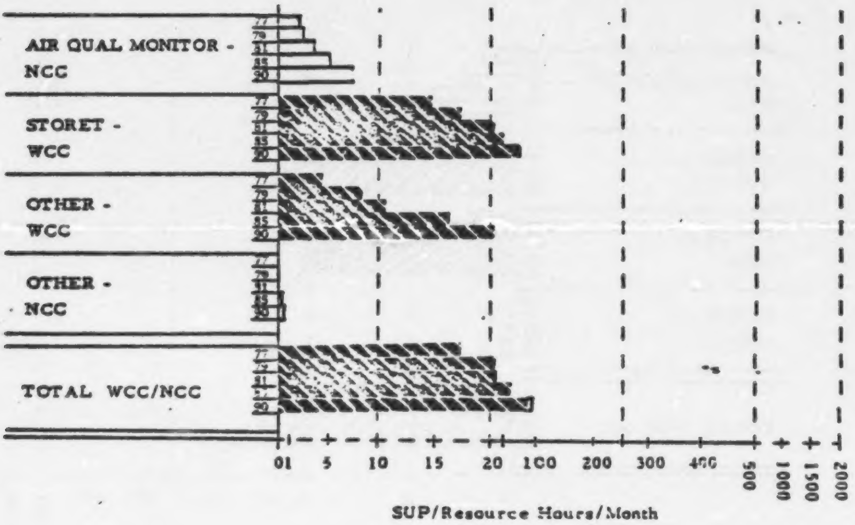


Figure 4-78.3. EMSL-LAS VEGAS Projected Workload
Scenario 3

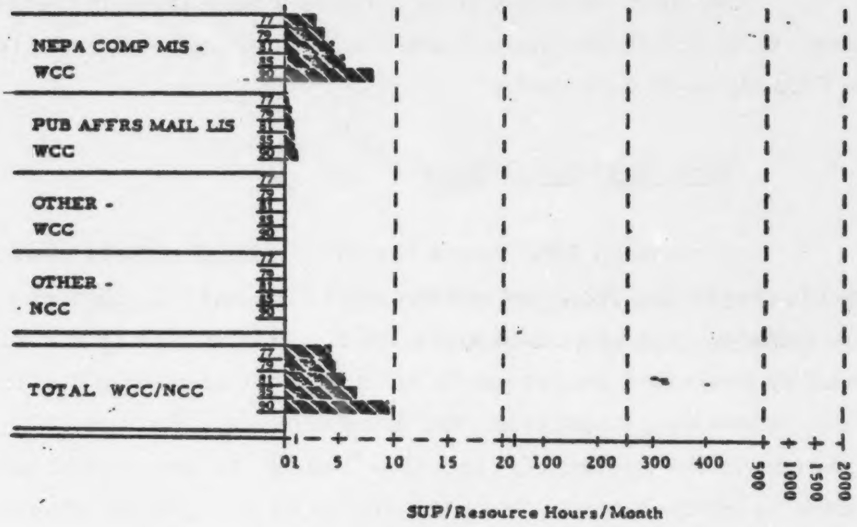


Figure 4-79. Staff Offices Projected Workload
Scenario 1

shown is much less than the overall EPA rate. A combination of information obtained from the Staff Offices activity managers and growth factors for the Office of Planning and Management (which has a similar function) was used for projections. Some limited growth is projected since existing activities will have slightly higher usage and because other Staff Offices such as the Office of International Activities are planning to start utilizing ADP.

Scenario II and higher demand would allow increased enhancement to activities while Scenario III is a status quo situation (see Figures 4-80 and 4-81).

4.4.9 EPA Regional Offices

Growth in ADP usage for the regional offices shows an initial increase for NCC operations under Scenario I (Figure 4-82) and a reduced rate of growth after 1985. This initial period of growth is caused by projected increases in ADP support of air quality data collection, compliance analysis, and air modeling. Beyond 1979, NCC operations in the region will increase due to the transfer of much of the air data handling function from the Office of Air Quality Planning and Standards to the regions and states.

Growth in WCC operations for the regions under Scenario I shows initial increases between 1977 and 1981 and a reduced rate of growth between 1981 and 1990. This initial period of growth is due primarily to increased use of STORET and other water quality systems used in support of projected increases in water quality data collection and analysis, and reporting of water quality control progress by the region and state as mandated by the Federal Water Pollution Control Act.

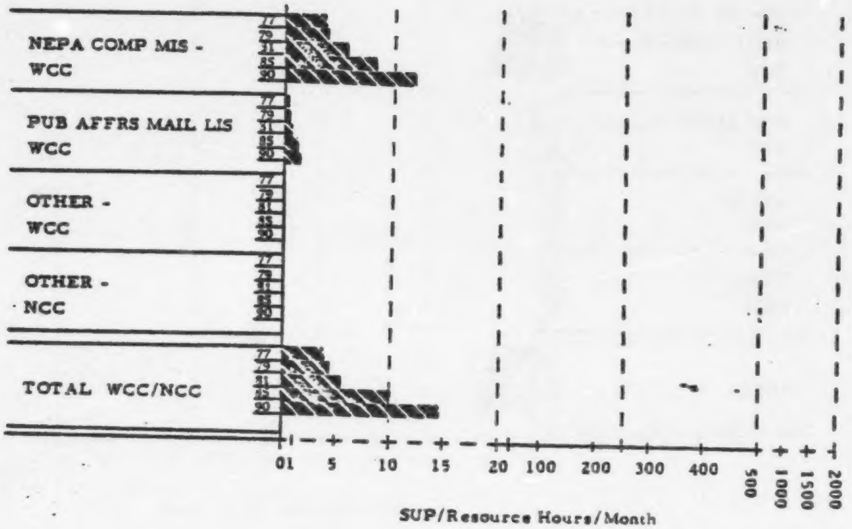


Figure 4-80. Staff Offices Projected Workload
Scenario 2

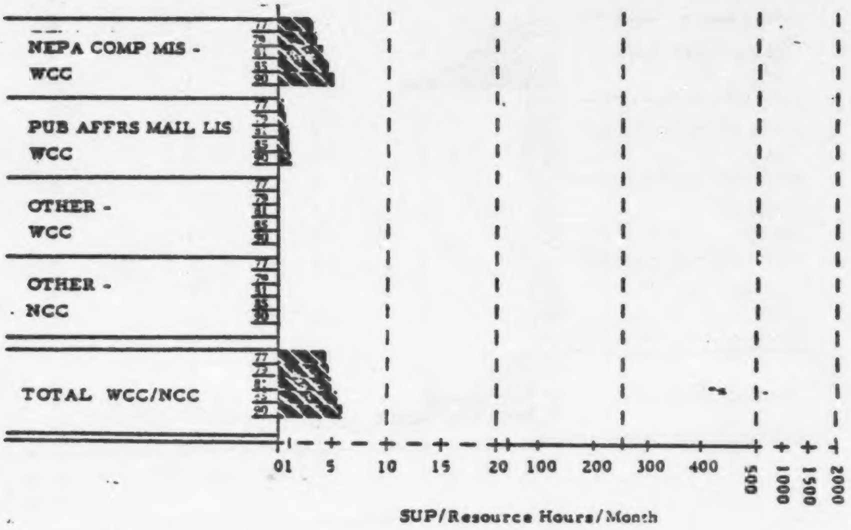


Figure 4-81. Staff Offices Projected Workload
Scenario 3

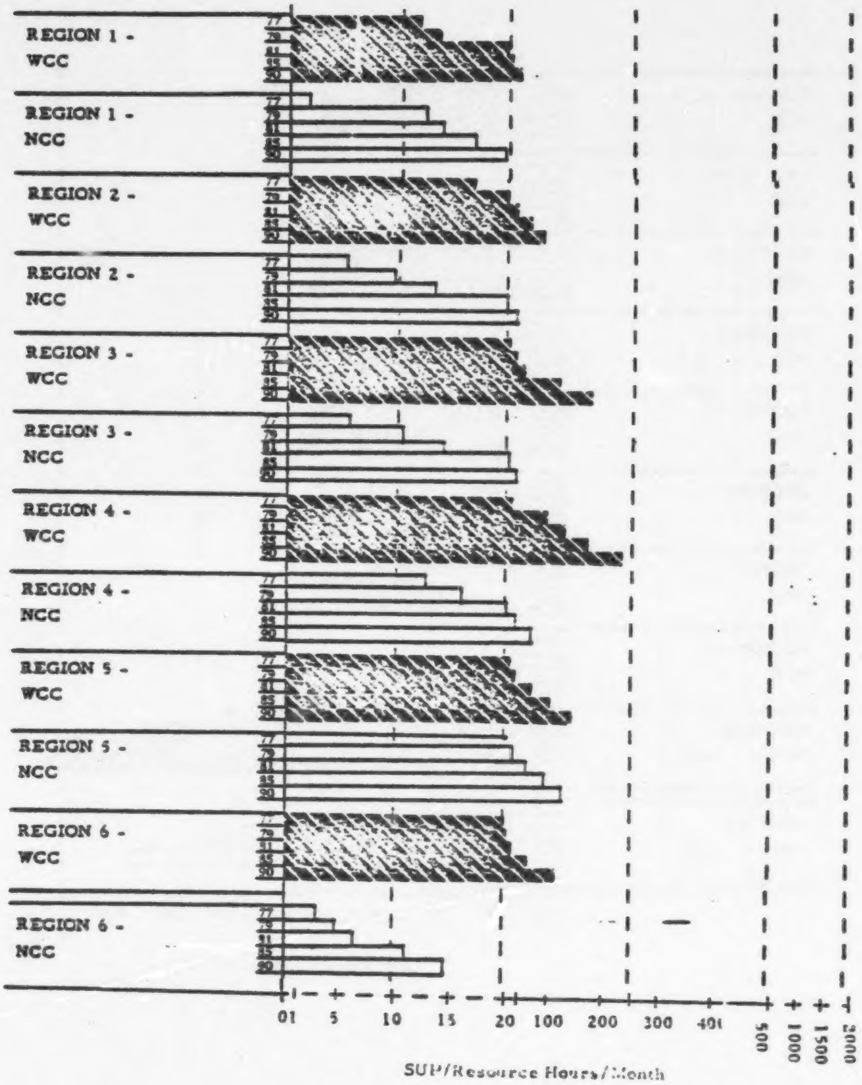


Figure 4-82. Regions Projected Workload
Scenario 1

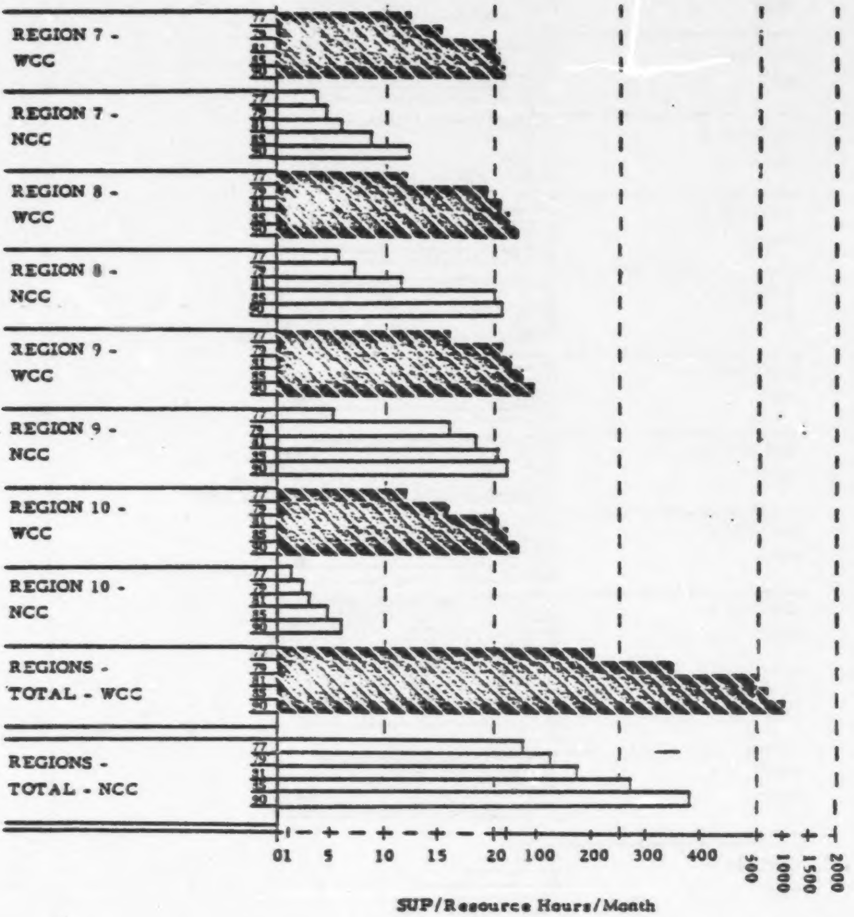


Figure 4-82. Regions Projected Workload
Scenario 1

Other factors contributing to the regional ADP workload growth include the following:

- Increased use of GICS (Grant Information and Control System) due to increased number of grants.
- Decentralization and increased quality assurance activities for the NEDS data base occuring in FY 1978.
- Increased quality assurance activities in all program areas resulting in increased storage and data verification.
- Increased use of graphics and statistical analysis by regional managers for decision making.

Scenario II (Figure 4-83) and greater demand for environmental safeguards, would impact most ADP activities in the regions by increasing the amount of data collected for air and water systems and increased automated analysis and reporting of mandated programs. Other factors include increased ADP support of administrative tasks such as regional accounting of grant and contract funds, word processing, and policy analysis. Scenario III (Figure 4-84) would cause a general curtailment of these programs, especially in the development of new administrative support systems, with less impact on support of national systems such as GICS, STORET, NEDS, and SAROAD.

The impact on ADP timesharing of the minicomputers currently installed in three of the regions and anticipated in several other regions during the projected time frame will be to generally reduce the growth rate of the total regional workload for centralized timesharing services. Workload projections for the regions reflect this by showing generally reducing growth rates after 1985 for NCC workload, and after 1981 for the WCC workload.

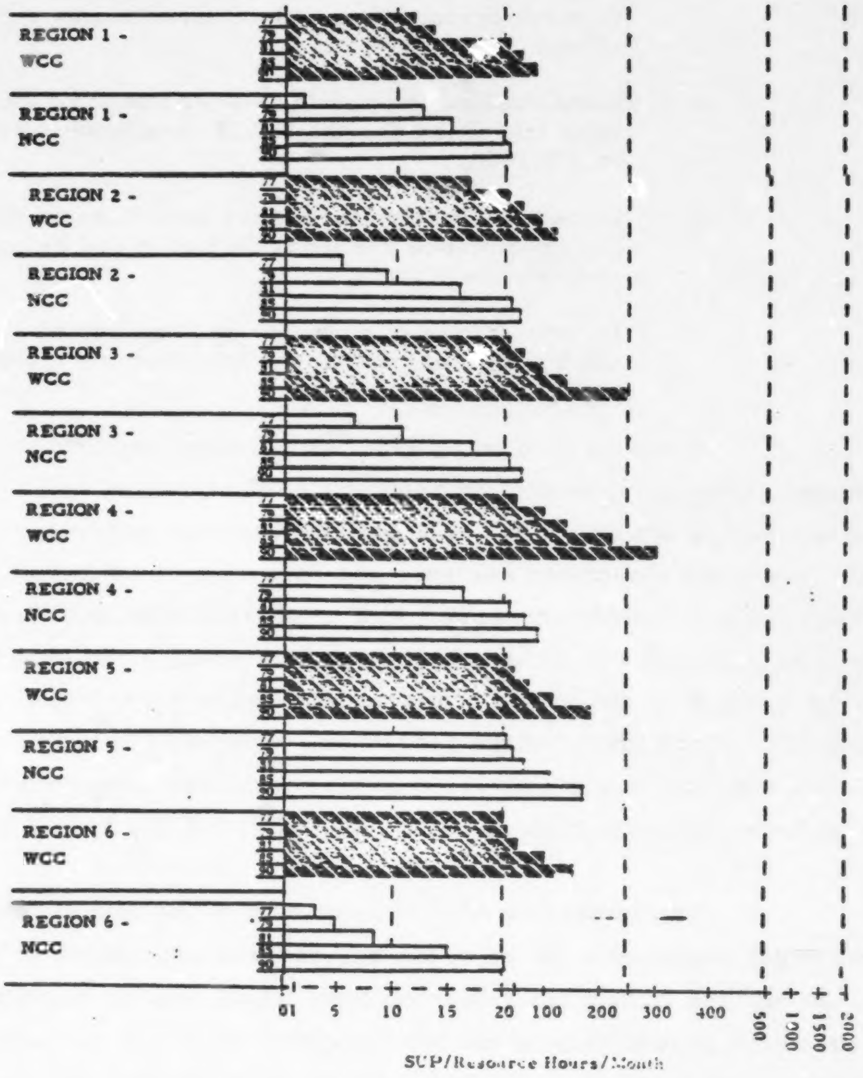


Figure 4-83. Regions Projected Workload
Scenario 2

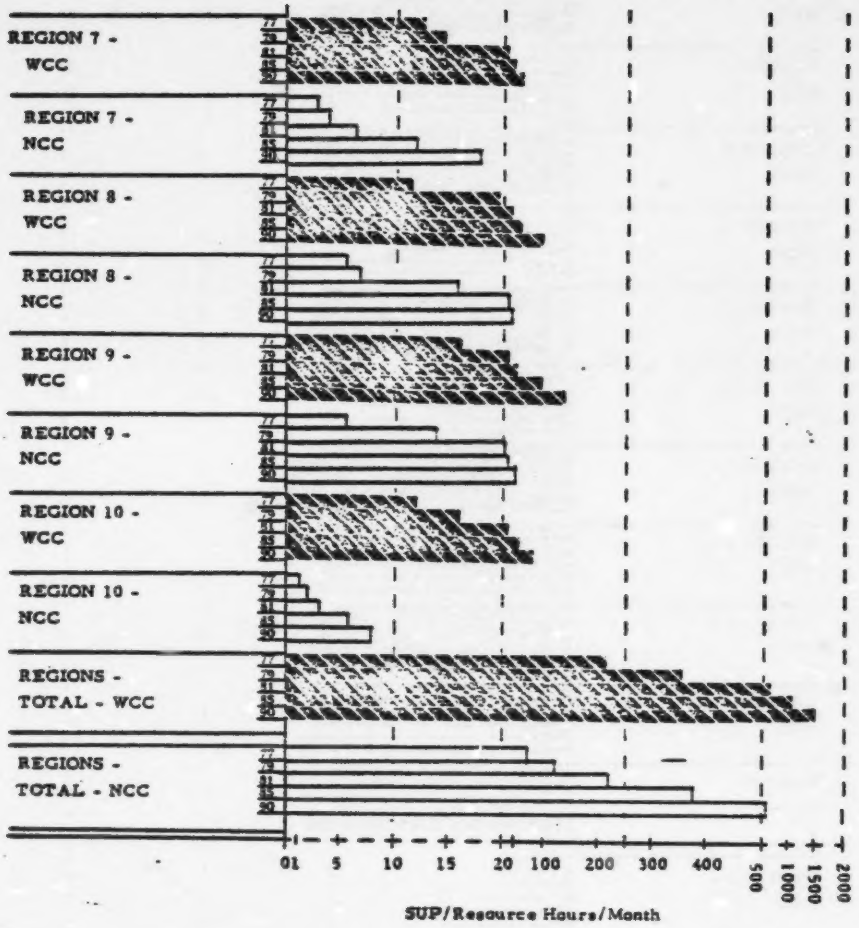


Figure 4-83. Regions Projected Workload
Scenario 2

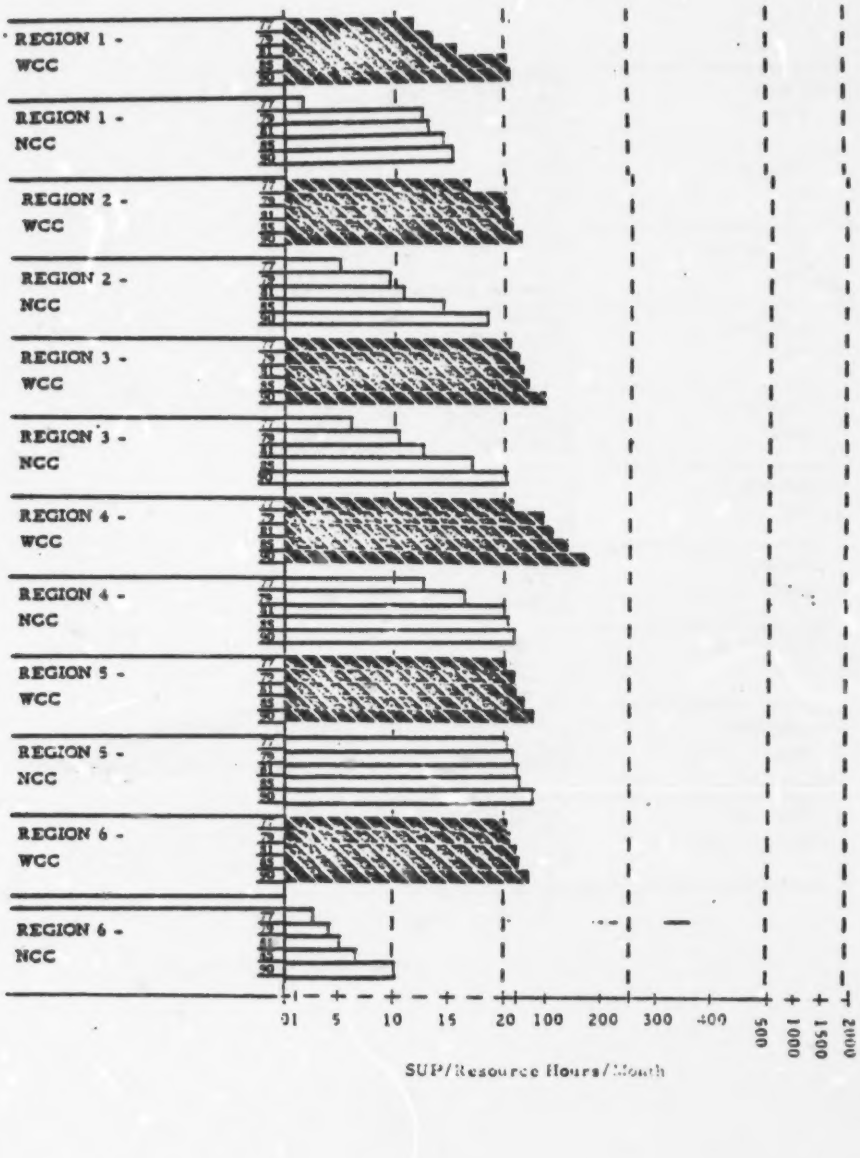


Figure 4-84. Regions Projected Workload
Scenario 3

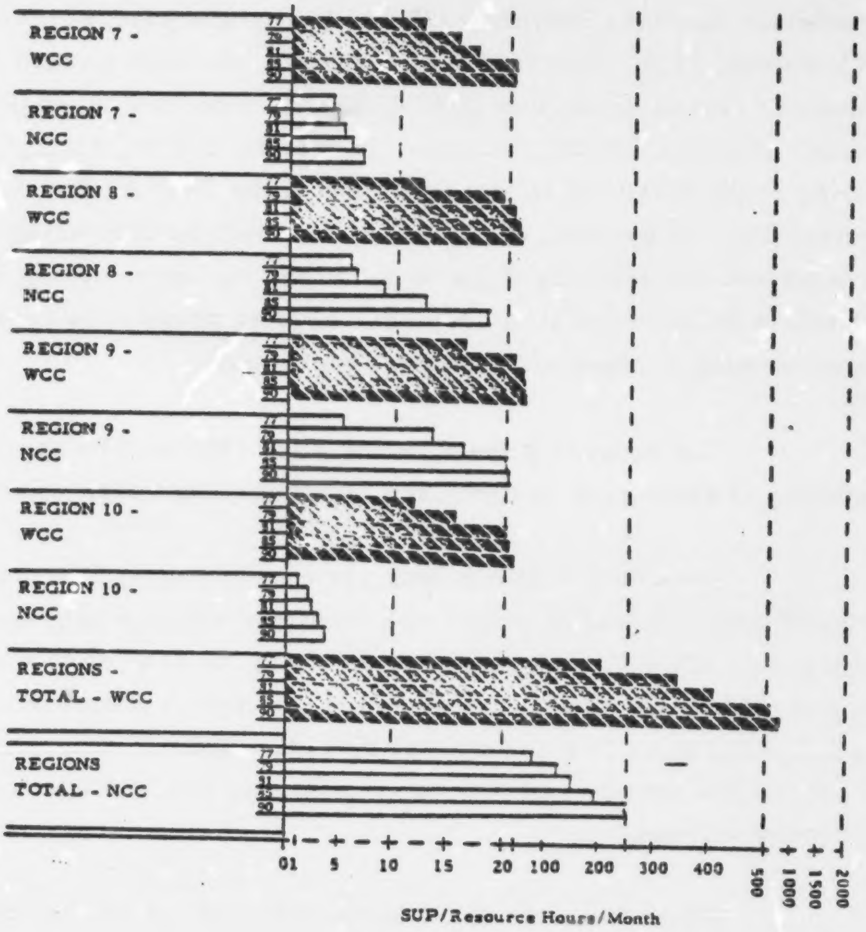


Figure 4-84. Regions Projected Workload
Scenario 3

The following subsections describe the projected programs and ADP activities for each of the ten regional offices.

A. EPA Region I Office

The projected Scenario I ADP timesharing growth rate shows a moderate increase between 1977 and 1981 and a gradual increase from 1981 through 1990. The period of moderate increase through 1981 is primarily caused by the use of STORET and other water quality control systems due to projected increases in data collection, analysis and reporting of the data to meet deadlines under the Federal Water Pollution Control Act. In general, ADP applications will be increasing in data management and analysis while data collection, especially in the water systems will decrease at the regional level as primacy is passed to the states to manage more of their own programs.

The reduced growth period after 1981 will be caused by the maturing of developing systems and leveling off of usage volumes.

State use of EPA's data systems in Region I is mostly with STORET and to a lesser extent with two state water supply systems. State use of STORET will increase mostly in the area of data collection for input into the system. The state water supply systems will soon be available and should be operational by 1978. This system will allow EPA to assist states in assessing compliance, and in initiating enforcement actions.

Under Scenario II the higher demand for environmental controls would impact Region I by increasing workload in all areas in support of guideline setting and enforcement, and in data analysis and reporting. Under Scenario III the reduced demand would cause cutbacks in usage of Region I systems, and to strictly required use of the national systems.

The charts in Figures 4-85, 4-86, and 4-87 present the projected ADP growth in workload for each scenario in each major ADP activity for Region I.

B. EPA Region II Office

The projected ADP timesharing growth rate for Scenario I shows a moderate increase of workload between 1977 and 1979 with a more gradual increase between 1979 and 1990. The period of rising usage through 1979 is caused primarily by the region's usage of their own system - the Water Enforcement Regional System - and their use of other systems on the Univac at NCC. In general, ADP applications will be increasing most in data management and analysis, tracking and reporting of data, and general administrative support.

The leveling off period after 1985 will be caused by the maturation of developing systems and reduced usage volume growth.

The state use of STORET in New Jersey and New York is expected to increase; almost doubling in New York in 1978. Puerto Rico is expected to begin using STORET in 1978.

Scenario II would impact Region II by increasing workload in all areas, especially water, in support of standards setting and data analysis and reporting. Scenario III would cause cutbacks in ADP efforts for all systems, and more workload would be passed to the states.

The charts in Figures 4-88, 4-89, and 4-90 show projected workload under each scenario for ADP activities in Region II.

C. EPA Region III Office

The projected ADP time-sharing growth rate for Scenario I

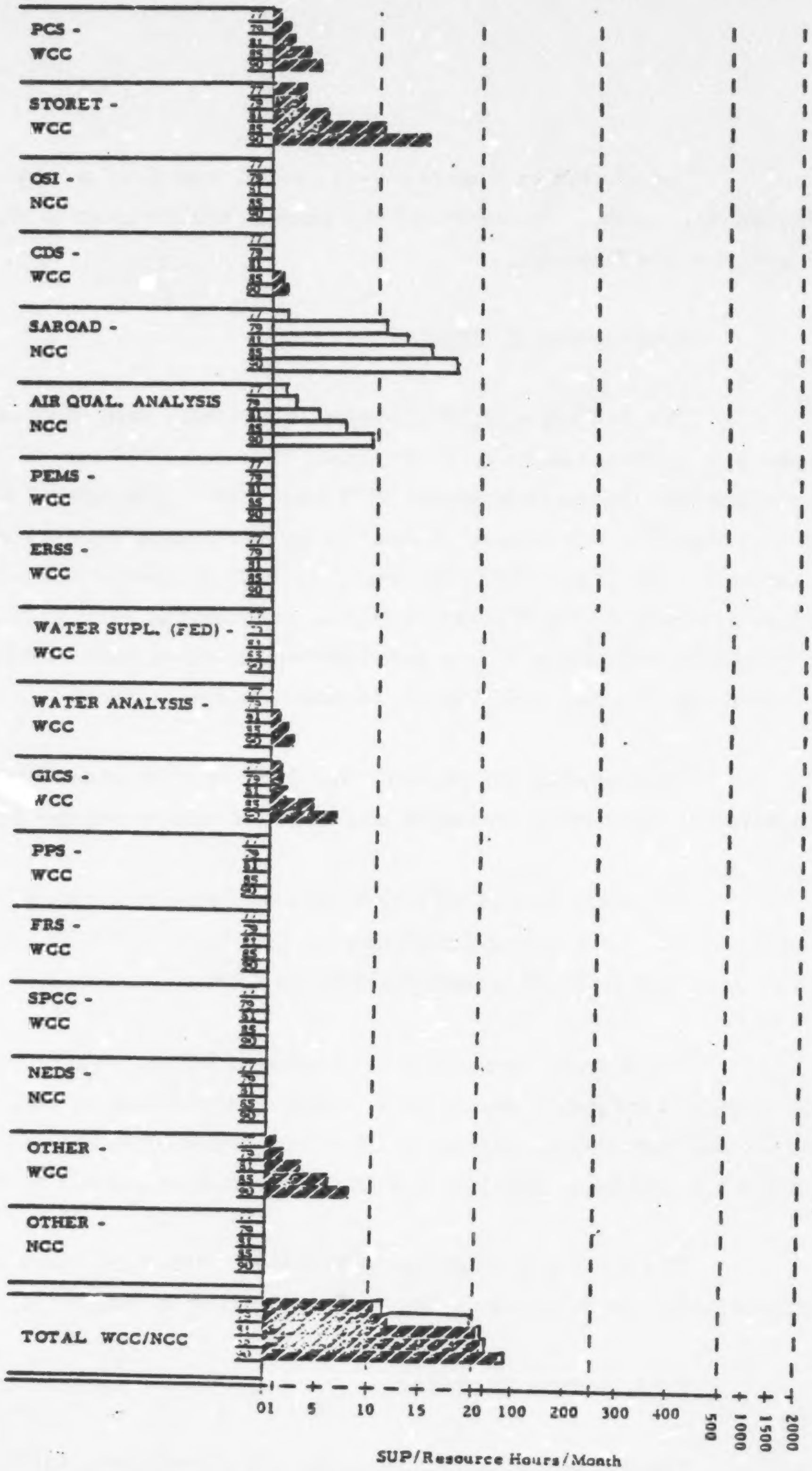


Figure 4-85. Region 1 Projected Workload
Scenario 1

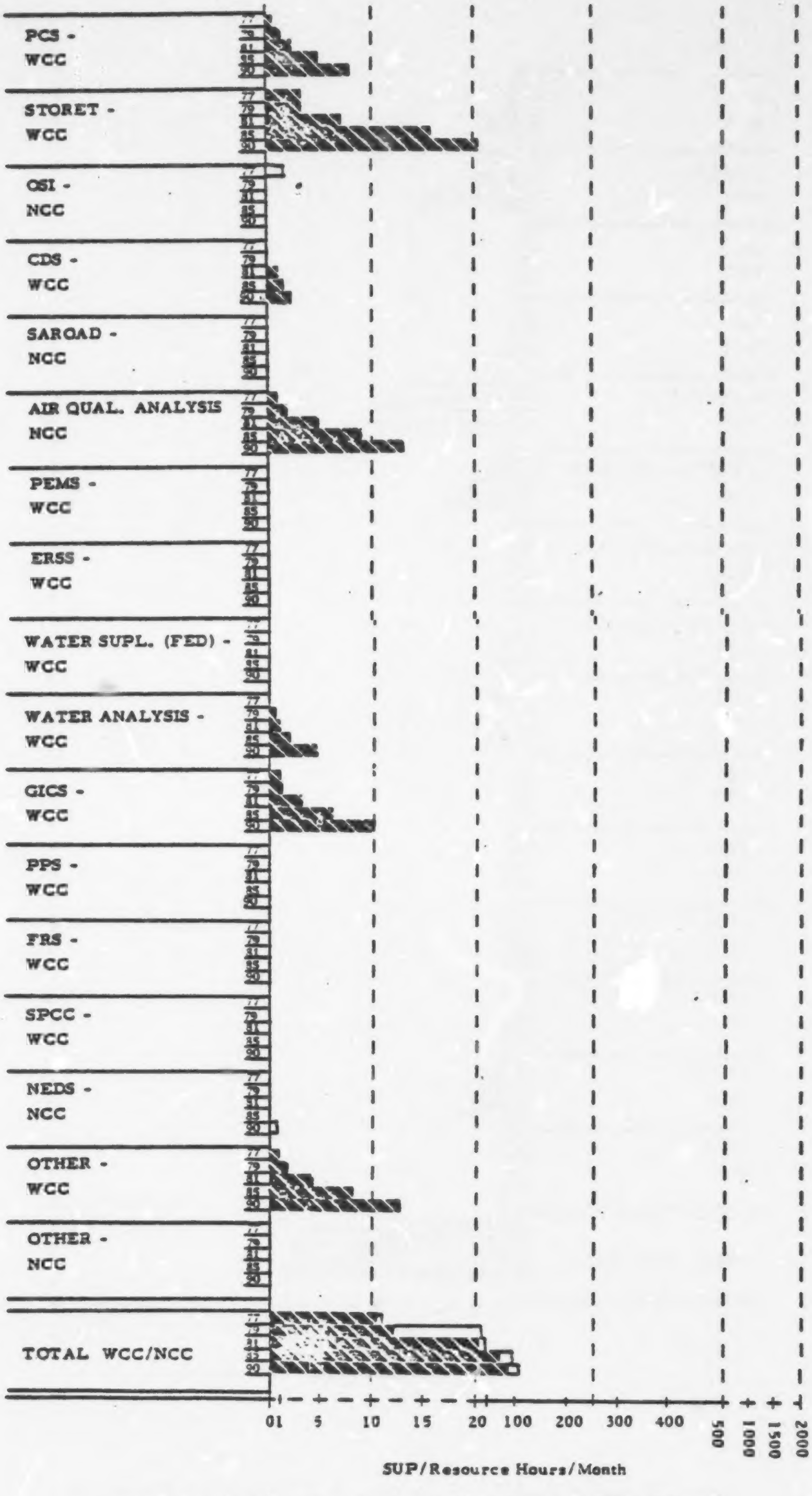


Figure 4-86. Region 1 Projected Workload
Scenario 2

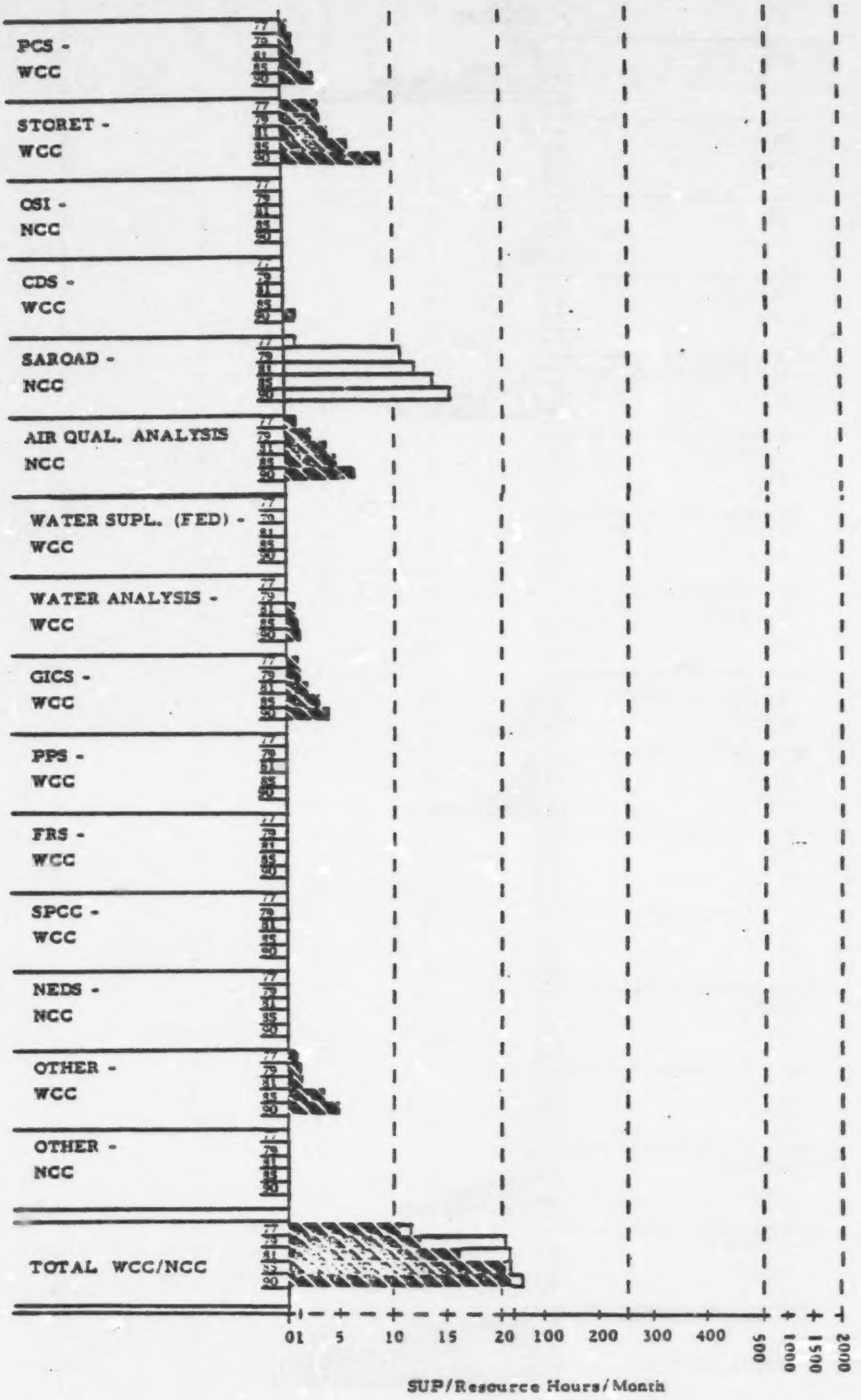


Figure 4-87. Region 1 Projected Workload
Scenario 3

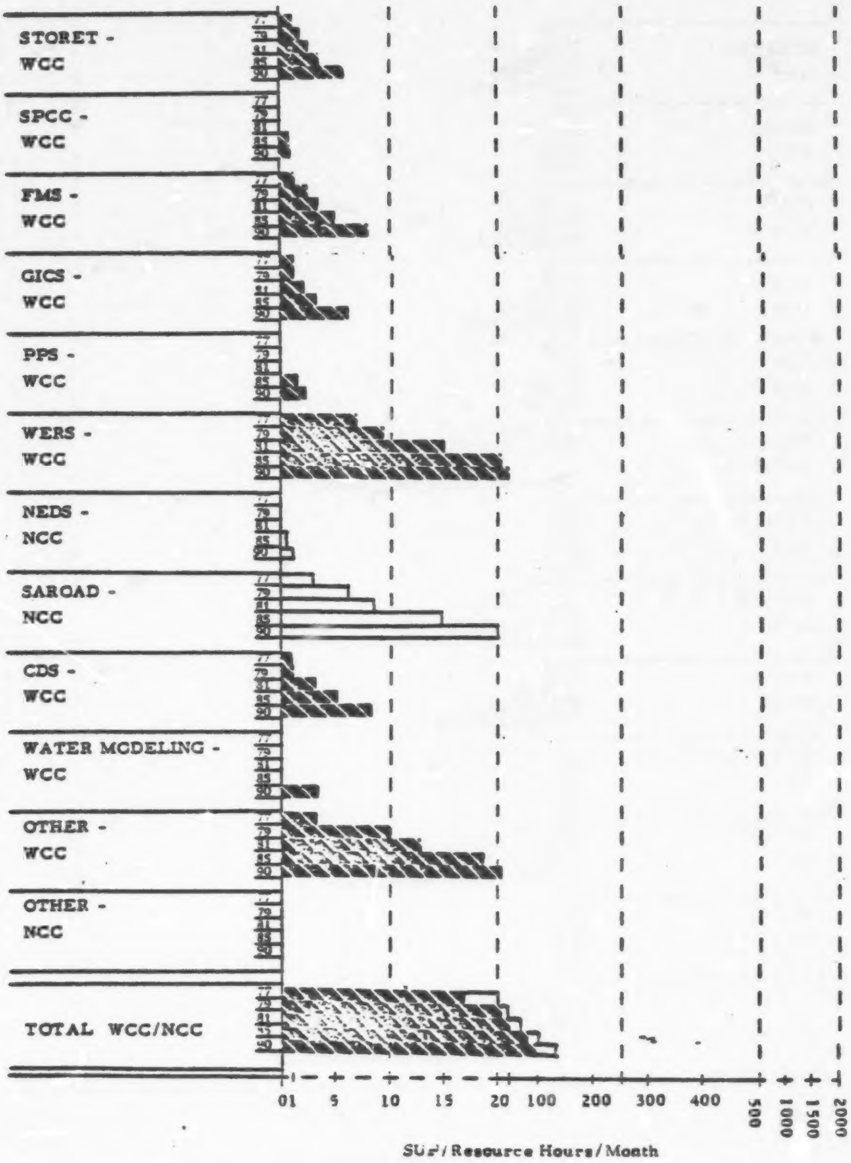


Figure 4-88. Region 2 Projected Workload
Scenario 1

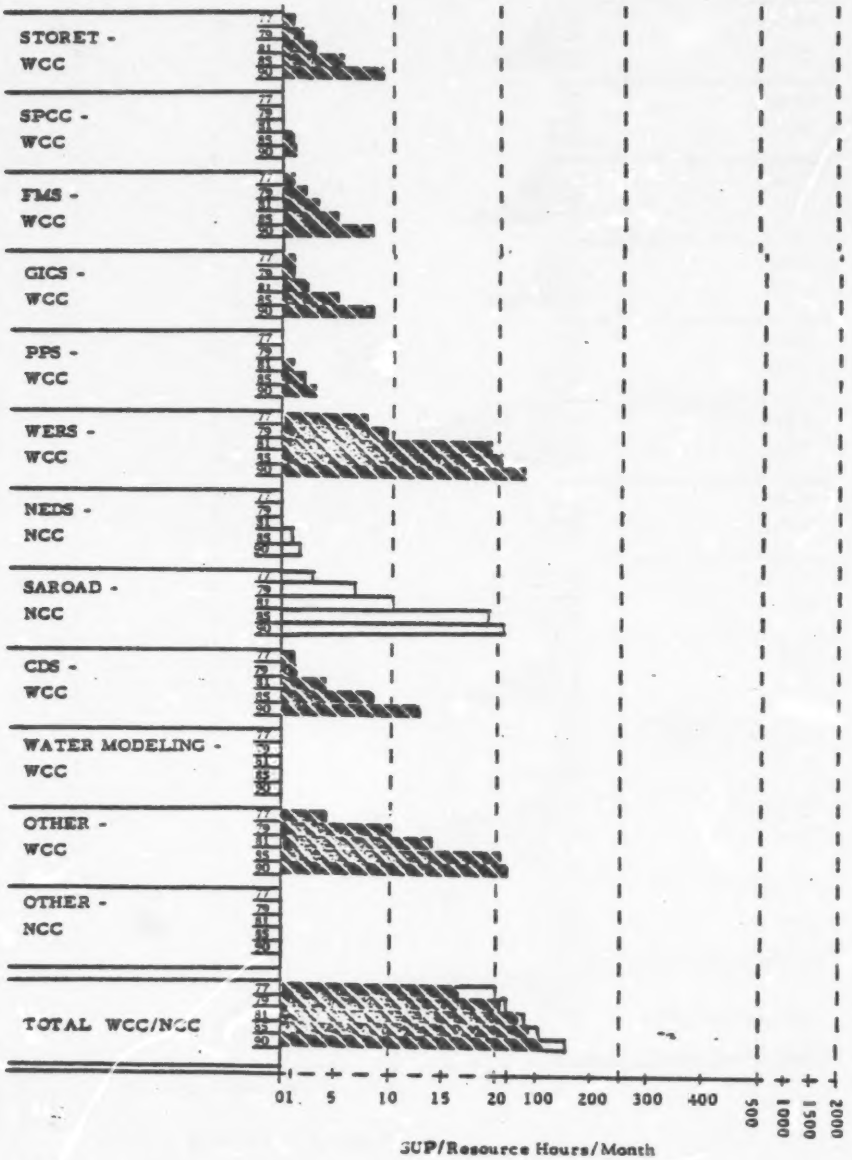


Figure 4-89. Region 2 Projected Workload
Scenario 2

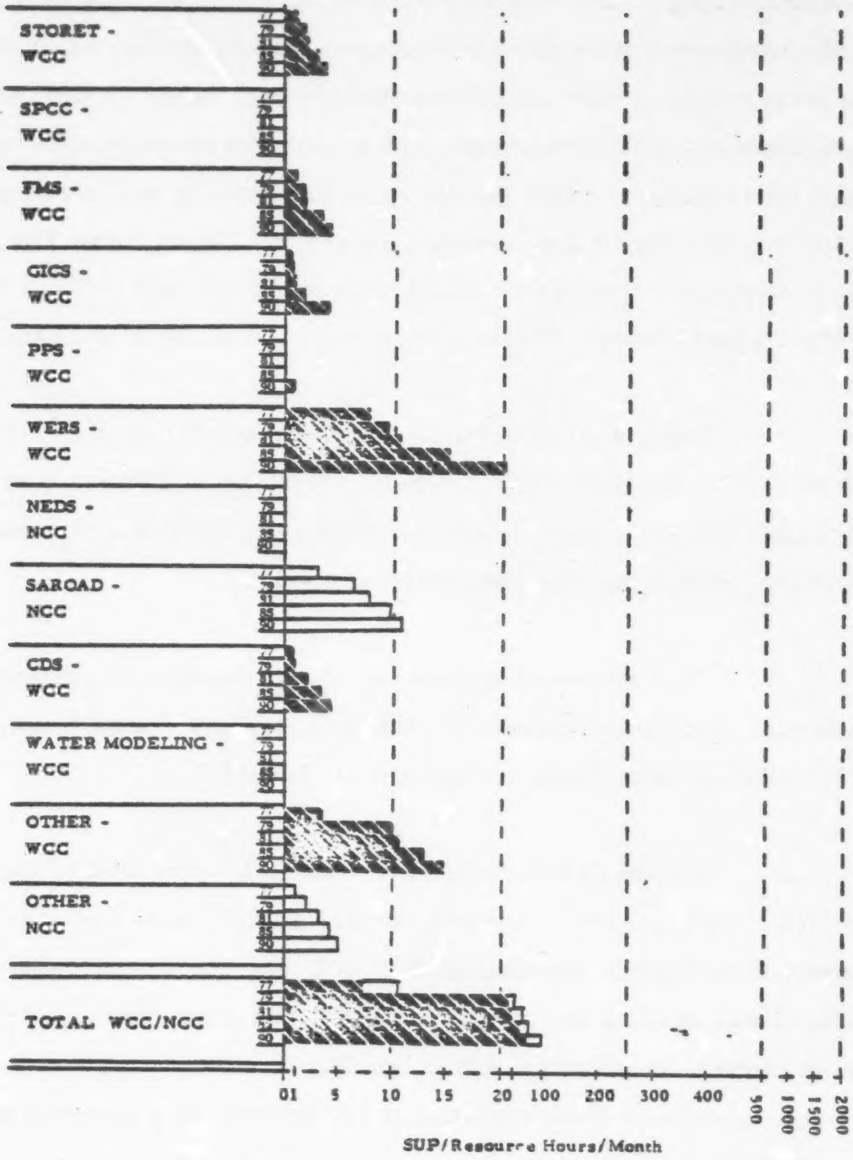


Figure 4-90. Region 2 Projected Workload
Scenario 3

shows a moderate increase throughout the time period depicted. Factors strongly affecting this growth rate are the Region's commitment to the implementation of data management and quality assurance programs, the integration of various programmatic data bases to provide overall environmental quality indices, and greatly intensified efforts in data analysis to support management decision-making and strategic planning. Also contributing to the growth rate are the Chesapeake Bay Program which involves all environmental aspects of the Bay and the implementation of the Federal Water Supply Program in the state of Pennsylvania.

Region III is considering the acquisition of a minicomputer (PDP 11/70) and this would cause a reduction in timesharing workload especially in the areas of data reduction and analysis for locally developed tracking, reporting and evaluation systems.

The states of Delaware, Pennsylvania, Virginia and West Virginia, and three interstate commissions have been given Federal ADP suballowance funds for access to STORET.

Although the state of Maryland is expected to begin using STORET during 1978, the total amount of ADP suballowance funds is expected to remain constant at $93,000 with the states or commissions themselves funding any use of STORET and other EPA systems that exceed these funds. In addition, other local governmental agencies have been granted access to EPA systems under interagency agreements or intergovernmental agreements.

Under Scenario II, the higher demand for environmental programs would impact Region III by increasing data analysis, integration and evaluation efforts in all areas in support of regulatory requirements. Scenario III would cause cutbacks in all programs and where possible, the shift of data analysis and evaluation activities to the states.

Figures 4-91, 4-92 and 4-93 illustrate the projected workload for ADP activities under each scenario in Region III.

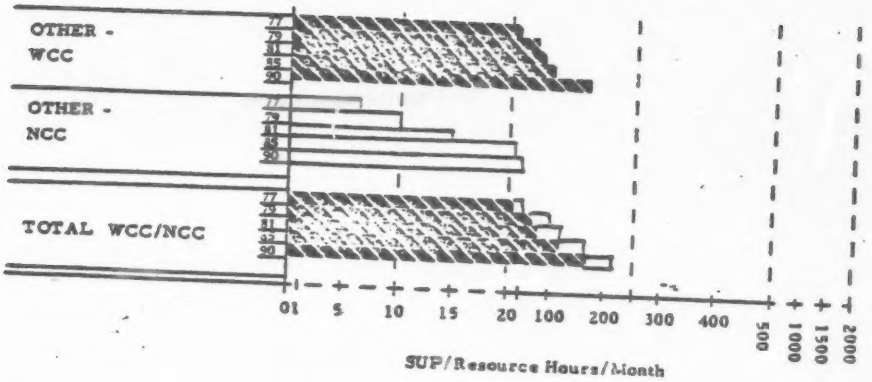


Figure 4-91. Region 3 Projected Workload
Scenario 1

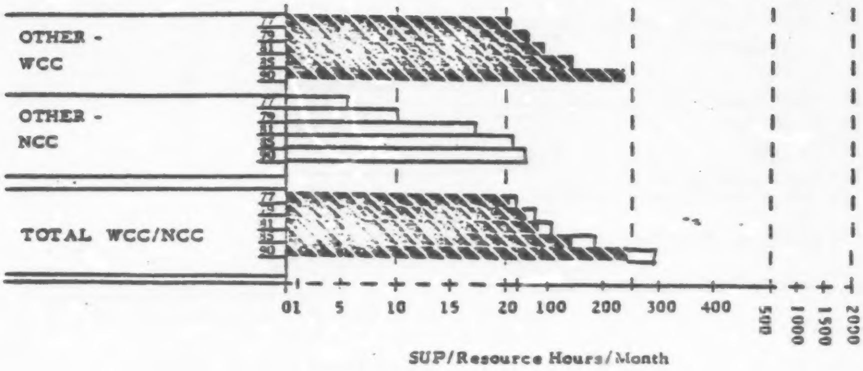


Figure 4-92. Region 3 Projected Workload
Scenario 2

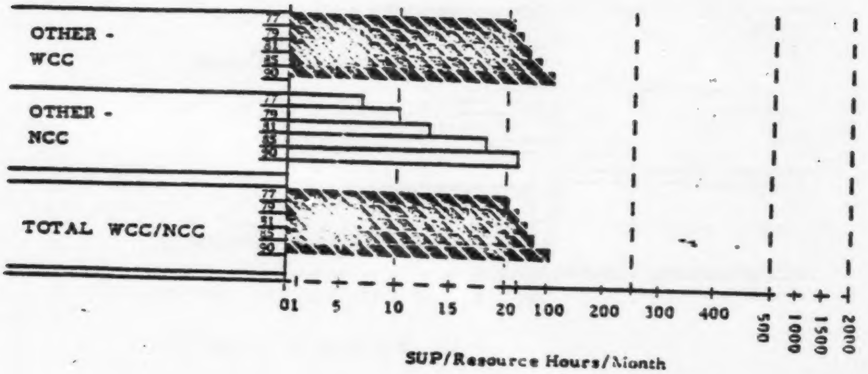


Figure 4-93. Region 3 Projected Workload
Scenario 3

D. EPA Region IV Office

The projected ADP time-sharing growth rate for Scenario I shows a constant increase over the 1977 to 1990 time frame. Region IV uses STORET very heavily; and in the NCC facility, SAROAD is used heavily. These two systems make up the largest part of the regional ADP workload. The continued growth reflected in the workload is caused primarily by the anticipated use of these two systems. In general, ADP applications will be increasing in data collection, data management, data analysis and modeling, and program (administrative) support; tracking and reporting will remain about the same.

Region IV's PDP 11/70 minicomputer is being programmed to take over some of the regional administrative and reporting requirements. For example, the 11/70 will be interfacing with the Washington Computer Center (WCC) for reporting GICS (Grants Information and Central System) Information.

The states within Region IV will continue to useSTORET and the Carolina File and will begin using the AUTOMAP system to support water quality control reporting.

Scenario II would tend to increase ADP utilization in higher priority air and water programs (STORET and SAROAD) while Scenario III would tend to shift more of the ADP workload to states.

The charts in Figures 4-94, 4-95 and 4-96 show projected workload under each scenario for ADP activities in Region IV.

E. EPA Region V Office

The projected ADP timesharing growth rate for Scenario I shows a moderate increase between 1977 and 1979 and a lessening increase between 1979 and 1990. The increase between 1977 and 1979 is partially caused by the increase in usage of STORET and SAROAD. Other contributing factors include the increased workload anticipated with the Toxic Substances and Solid Wastes programs. Economic modeling will show the biggest increase and will require considerable computer support. Increased usage of the regional minicomputer will offset some timesharing growth as new applications are developed for it.

The leveling off period after 1979 will be caused by the region's increasing reliance on their in-house minicomputer and from maturity of developing systems.

The Region V states will begin using some of EPA's existing systems such as GICS as more of the region's detailed activities are turned over to the states. The states will be conducting a larger share of data collection for the regional monitoring of pesticides, water supply, toxic substances, and air quality data.

Scenario II would impact Region V by increasing the workload in support of more independent regional activity and local contracting support, and by making additional funds available to the states. Scenario III would have little effect on regional programs but ADP usage would be restricted to the programs of higher priority.

The charts in Figures 4-97, 4-98 and 4-99 show projected growth in ADP workload under each scenario for Region V.

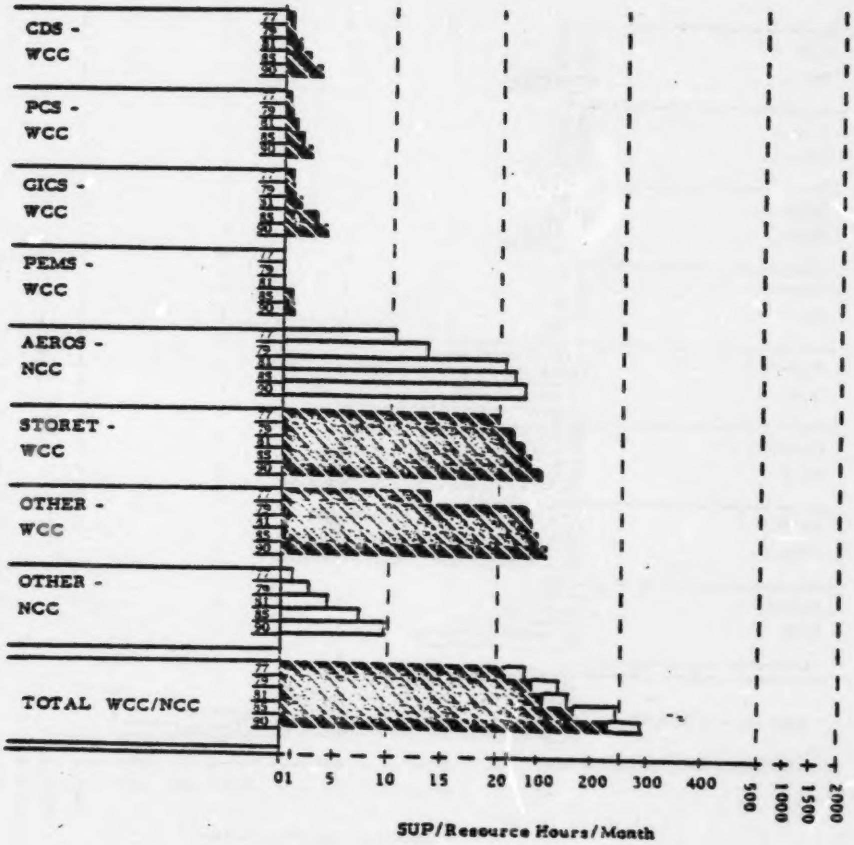


Figure 4-94. Region 4 Projected Workload
Scenario 1

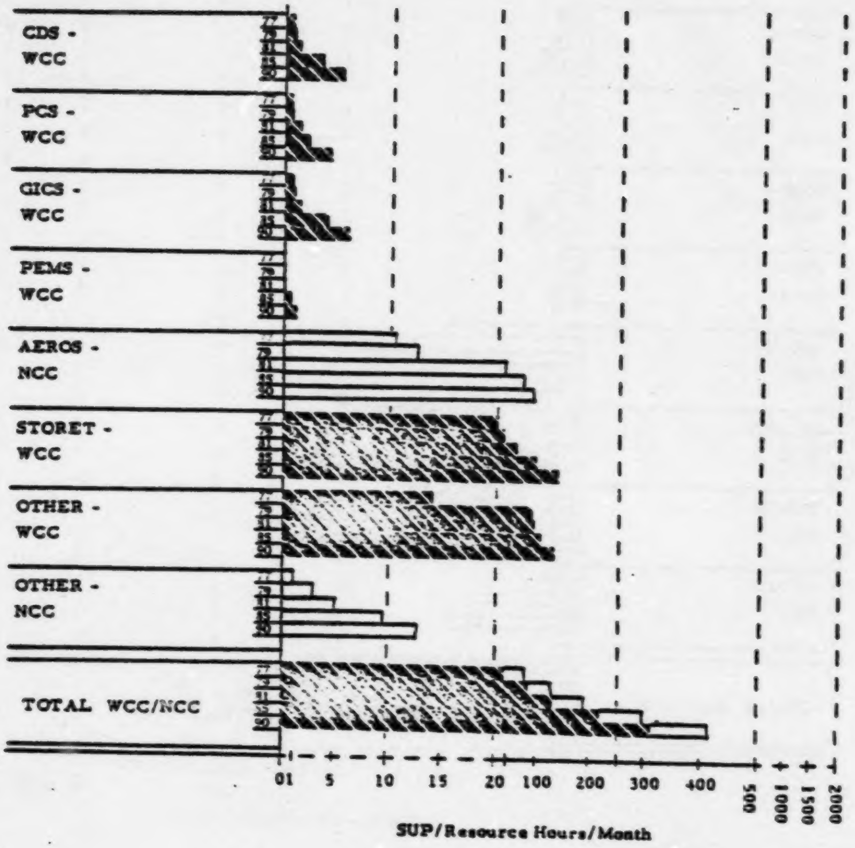


Figure 4-95. Region 4 Projected Workload
Scenario 2

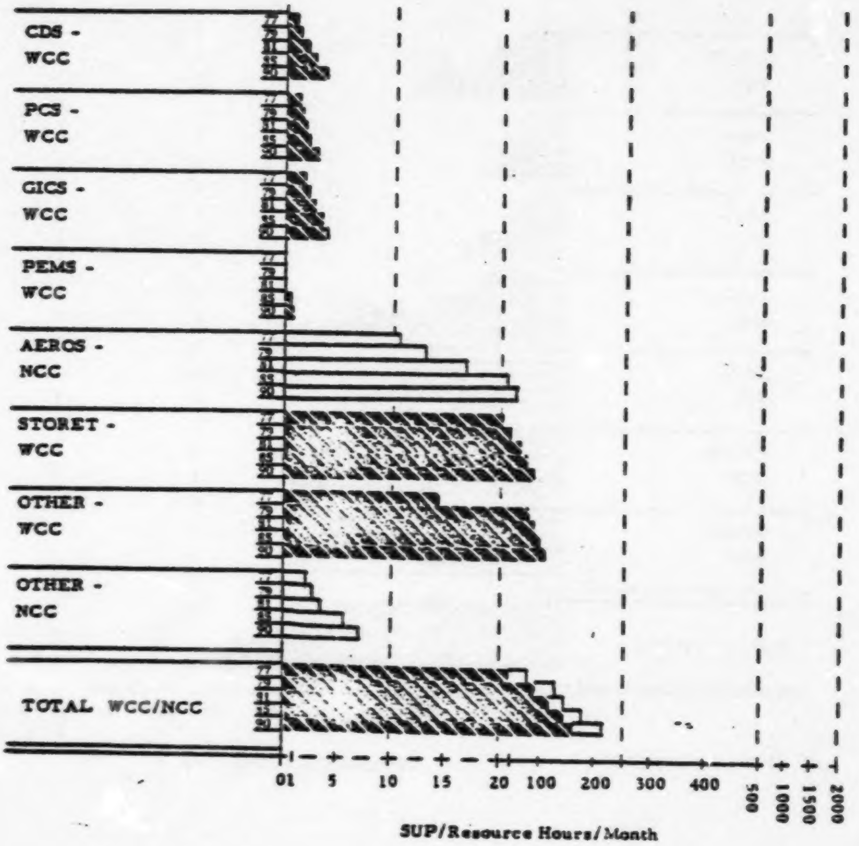


Figure 4-96. Region 4 Projected Workload
Scenario 3

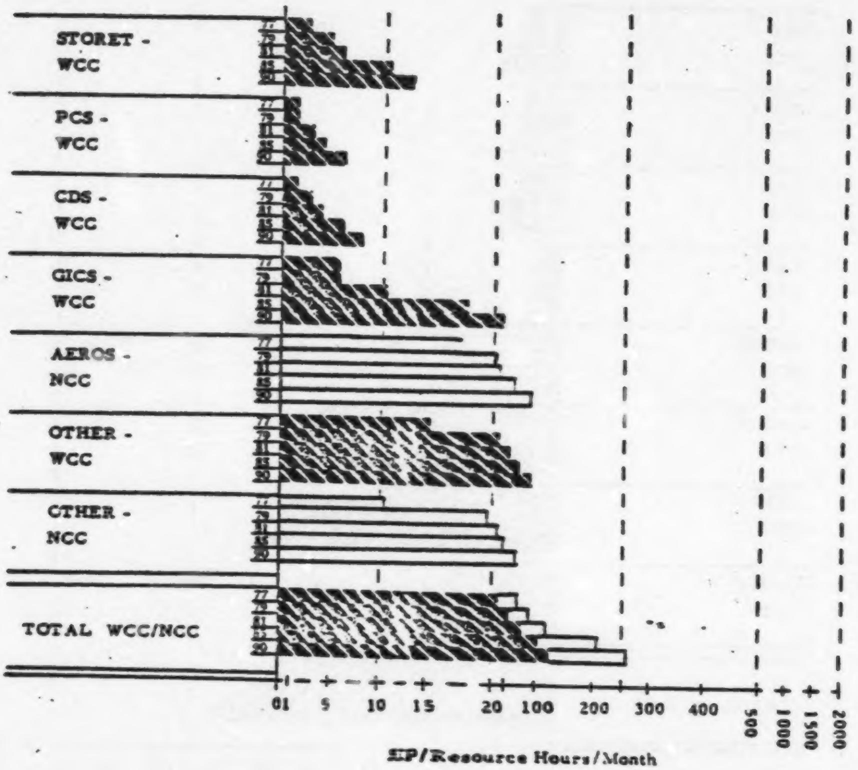


Figure 4-97. Region 5 Projected Workload
Scenario 1

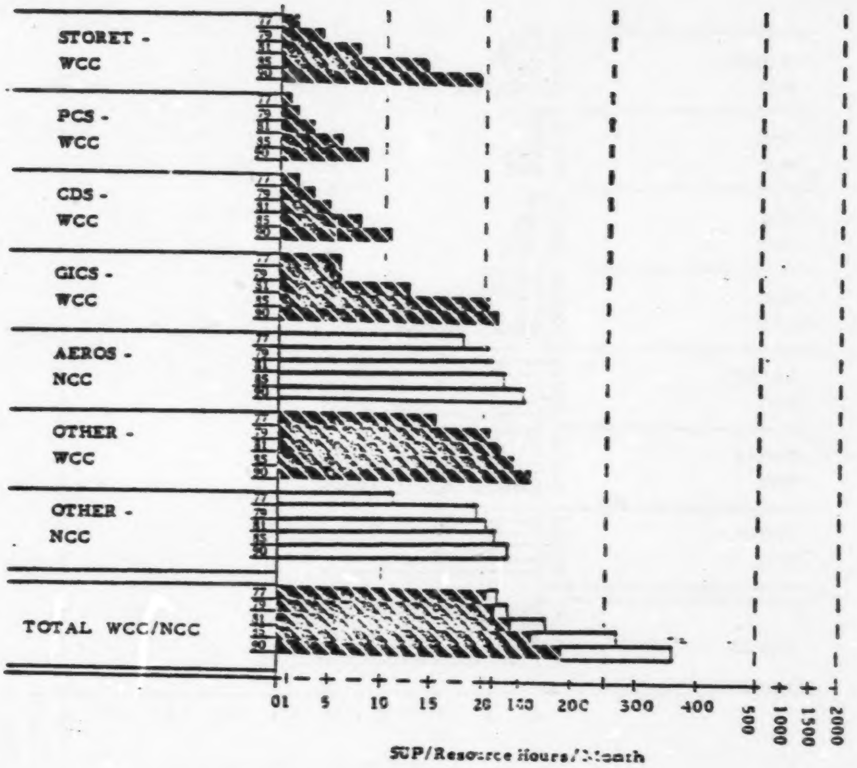


Figure 4-98. Region 5 Projected Workload
Scenario 2

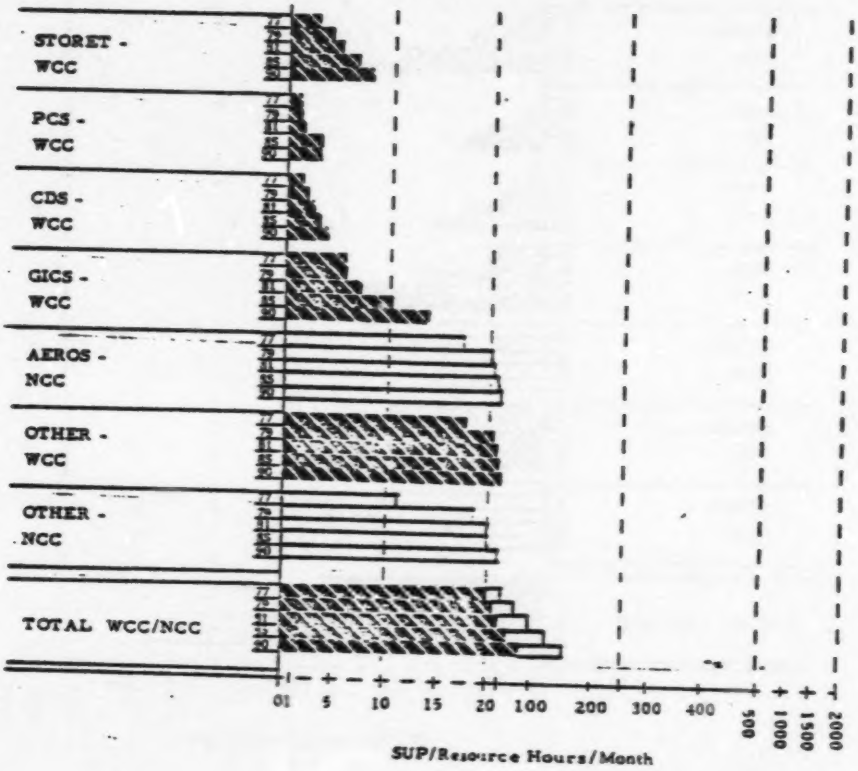


Figure 4-99. Region 5 Projected Workload
Scenario 3

F. EPA Region VI Office

The projected ADP timesharing growth rate under Scenario I shows a steady increase in workload between 1977 and 1990. This increasing timesharing workload is caused primarily by STORET and PCS due to projected increases in water quality data analysis and reporting of the data to meet deadlines of the Federal Water Pollution Central Act. In general, ADP applications will be increasing in data management and analysis, and in program support. The increasing trend of the workload tends to level off toward 1990 as developing systems mature.

The states will continue to use STORET and GICS to input and retrieve water quality data and to track progress of construction grant applications for water treatment facilities.

Scenario II will impact Region VI by increasing workload in all areas in support of standards setting and data analysis and reporting. Scenario III would cause minor cutbacks in all areas.

The charts in Figures 4-100, 4-101 and 4-102 show projected growth in workload under each scenario for ADP activities in Region VI.

G. EPA Region VII Office

The projected ADP timesharing growth rate for Scenario I shows a slight increase between 1977 and 1979. These increases are expected to alleviate tight personnel slots with automated procedures, under the impact of new legislation and modifications to existing legislation. Areas of concentration of ADP resources will be in Toxic Substances and Solid Wastes. Additional emphasis in graphics support will be employed for financial management activities and those using STORET. A shift will be made away from the central timesharing facilities toward

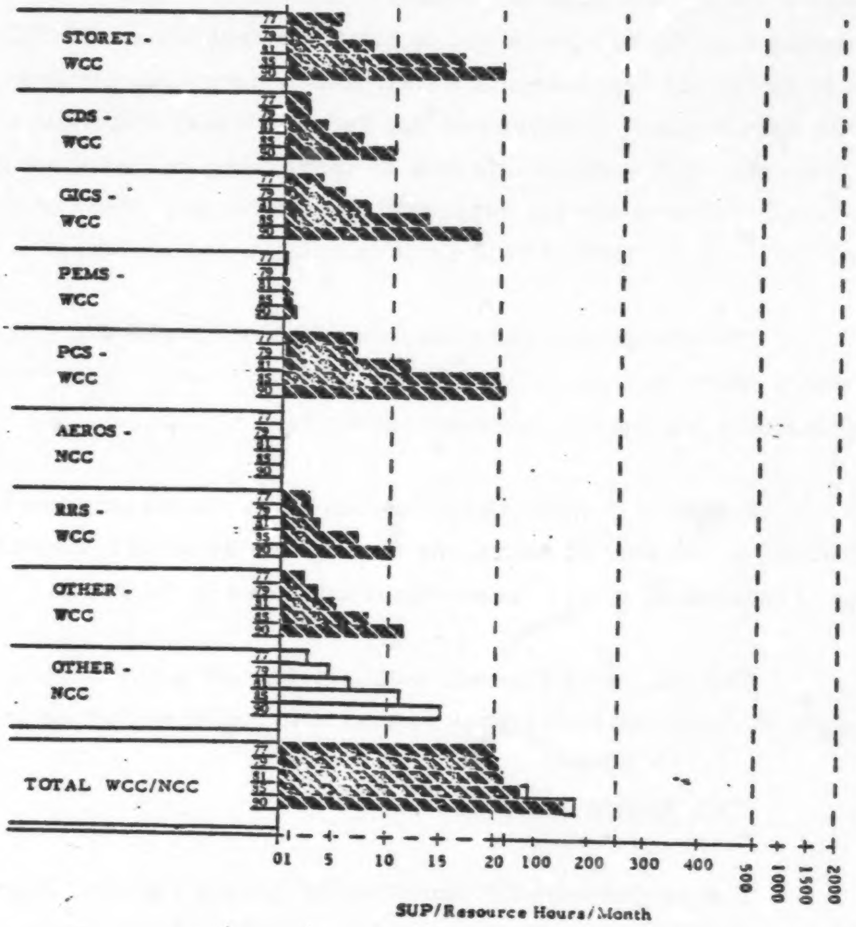


Figure 4-100. Region 6 Projected Workload
Scenario 1

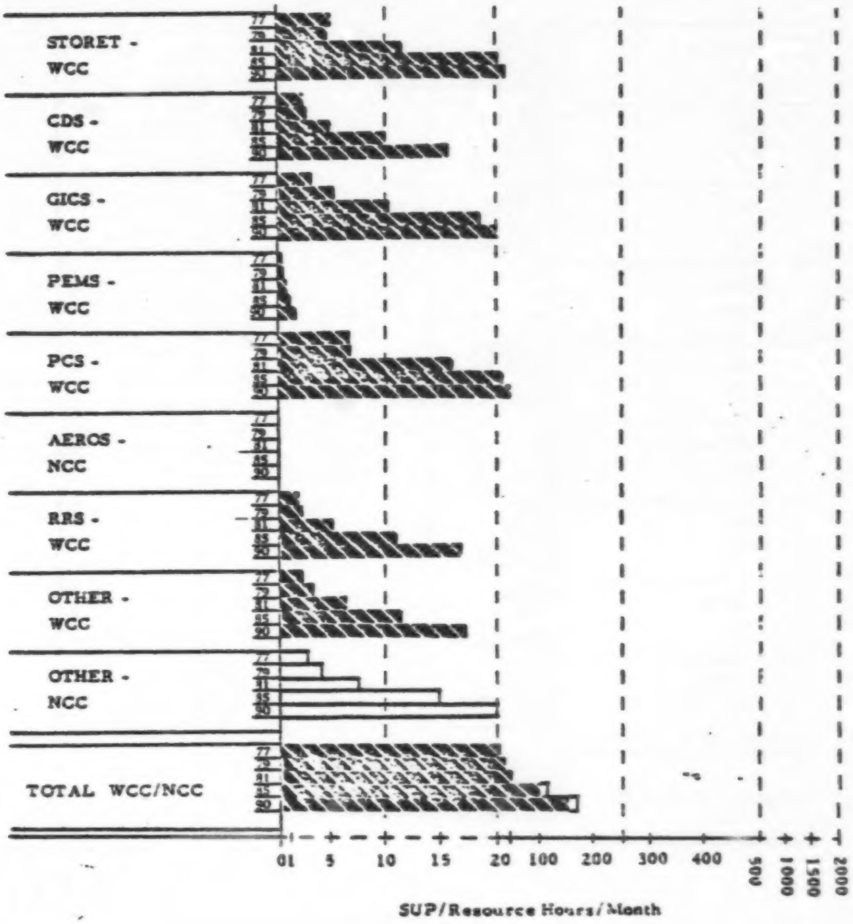


Figure 4-101. Region 6 Projected Workload
Scenario 2

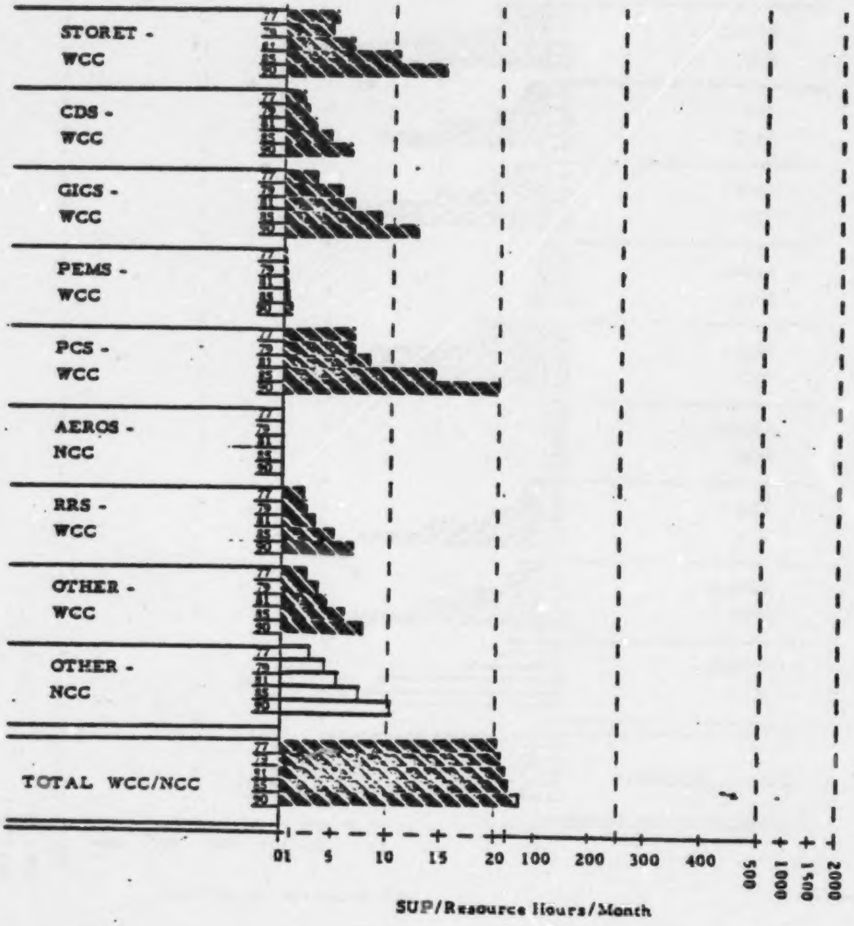


Figure 4-102. Region 6 Projected Workload
Scenario 3

a minicomputer type of local processor and terminal, as staff becomes available and applications are developed for regional and state use.

State use of STORET will continue with increasing workload.

Scenario II would cause no change in Region VII's ADP activities. Scenario III would cause the region to cut back to bare reporting requirements.

The charts in Figures 4-103, 4-104 and 4-105 present projected growth in workload under each scenario for ADP activities in Region VII.

H. EPA Region VIII Office

The projected ADP timesharing growth rate under Scenario I shows a moderate increase between 1977 and 1990. These increases are due primarily to SAROAD and NEDS which support projected increases in air data collection and analysis. In general, ADP applications will be increasing most in data management and analysis. The states will continue to use STORET at a moderately increasing rate.

Scenario II would impact Region VIII by increasing development of new systems to meet headquarters reporting requirements in pesticides, toxics, and water and air quality control. Scenario III would cause the region to cut back on the region's own systems and resort to meeting minimum headquarters requirements.

The charts in Figures 4-106, 4-107 and 4-108 illustrate projected growth in workload for ADP activities under each scenario in Region VIII.

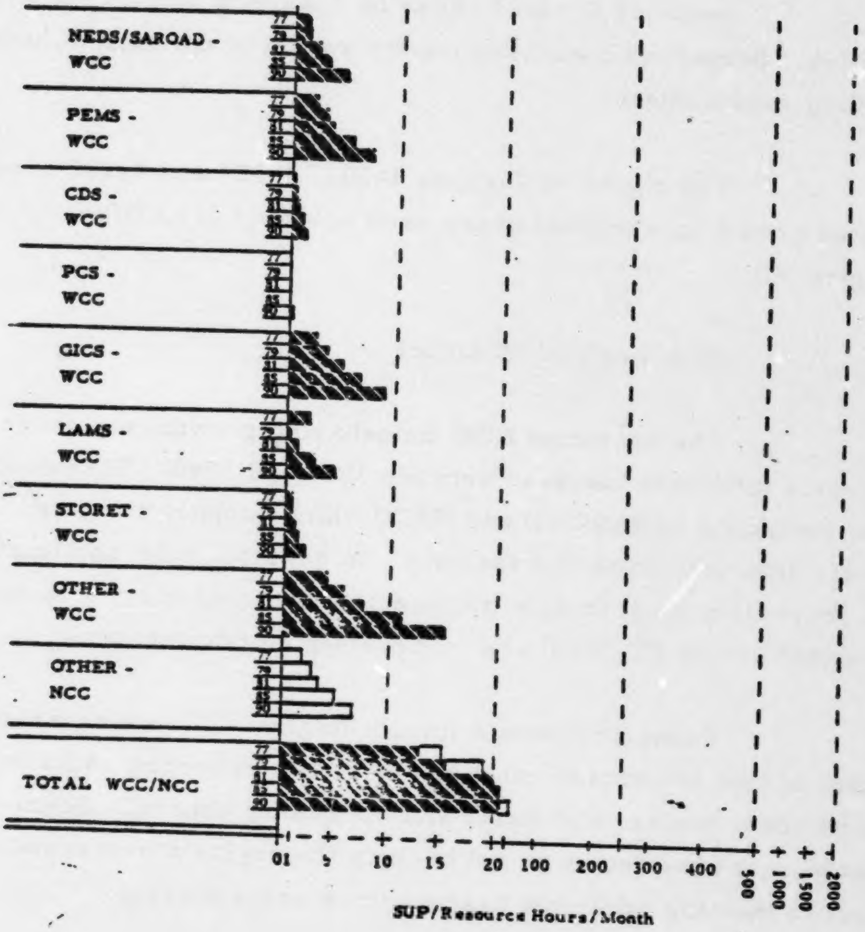


Figure 4-103. Region 7 Projected Workload
Scenario 1

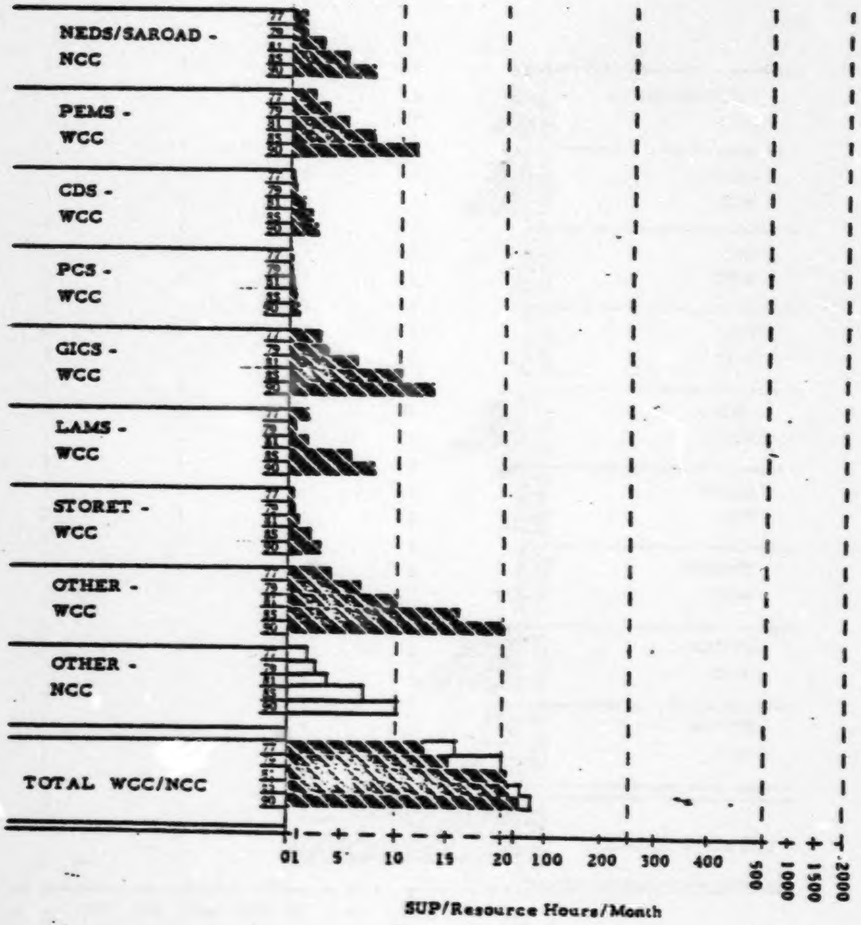


Figure 4-104. Region 7 Projected Workload
Scenario 2

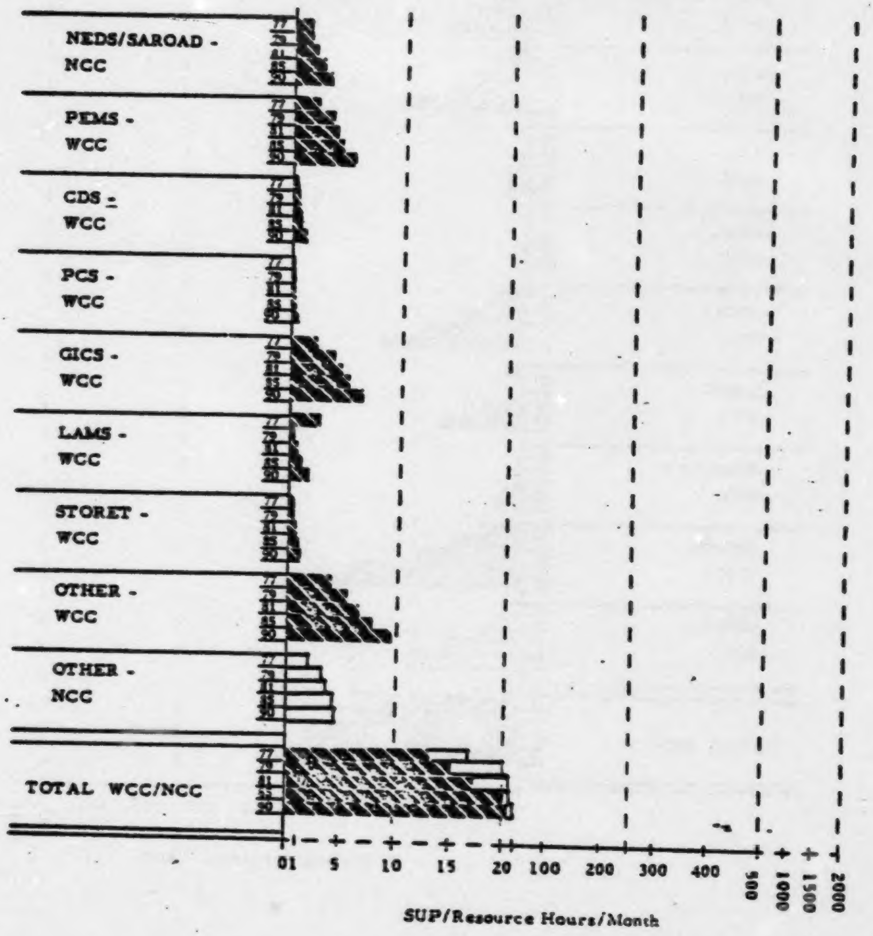


Figure 4-105. Region 7 Projected Workload
Scenario 3

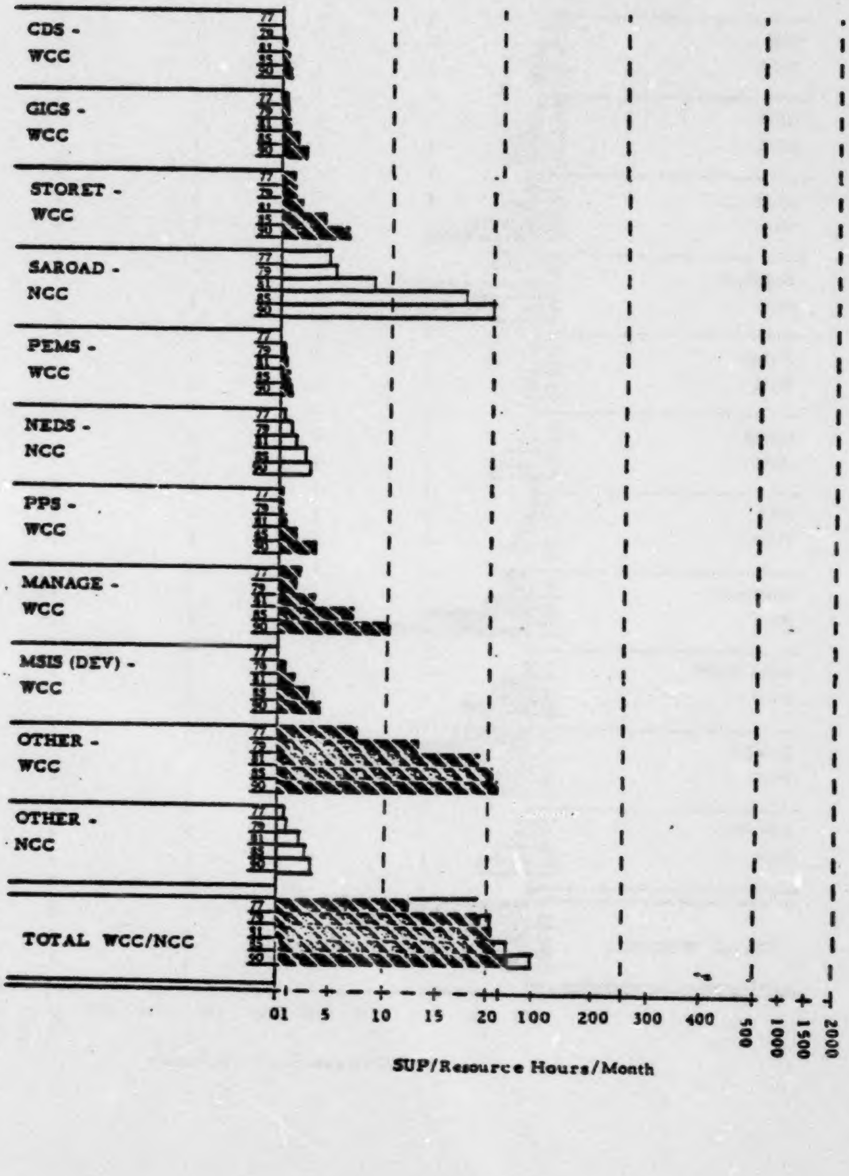


Figure 4-106. Region 8 Projected Workload
Scenario 1

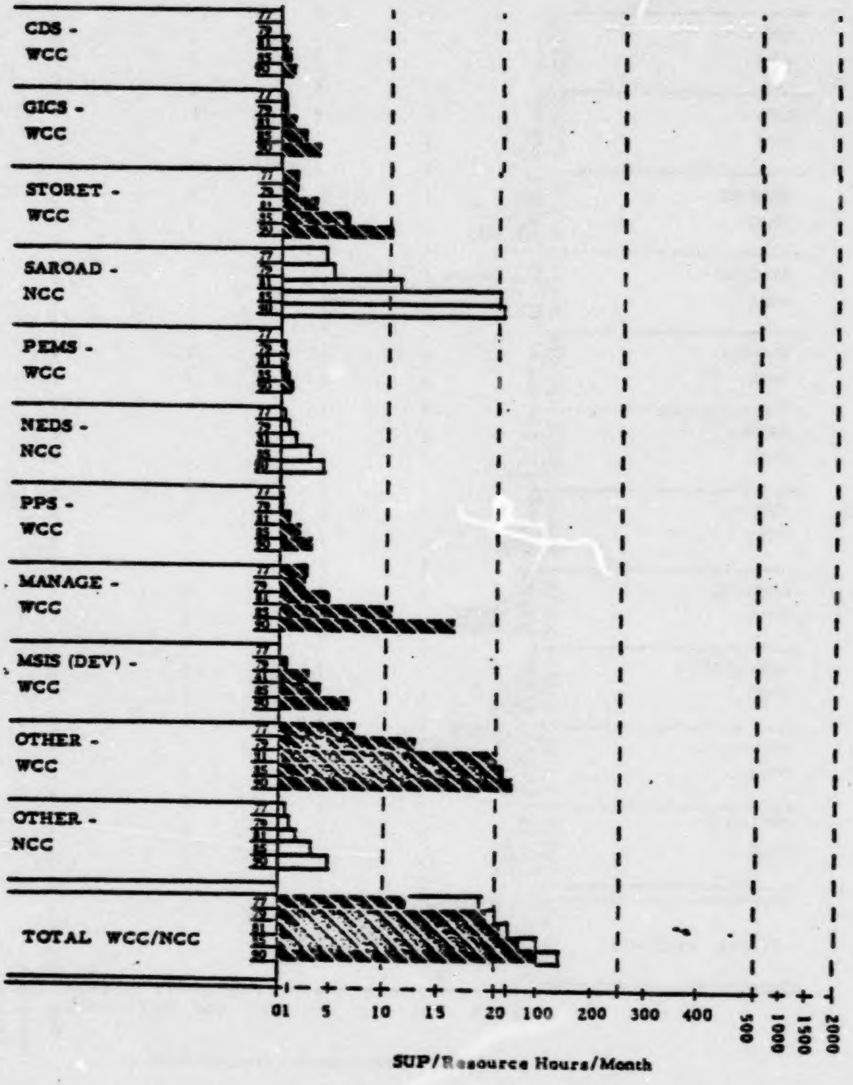


Figure 4-107. Region 8 Projected Workload
Scenario 2

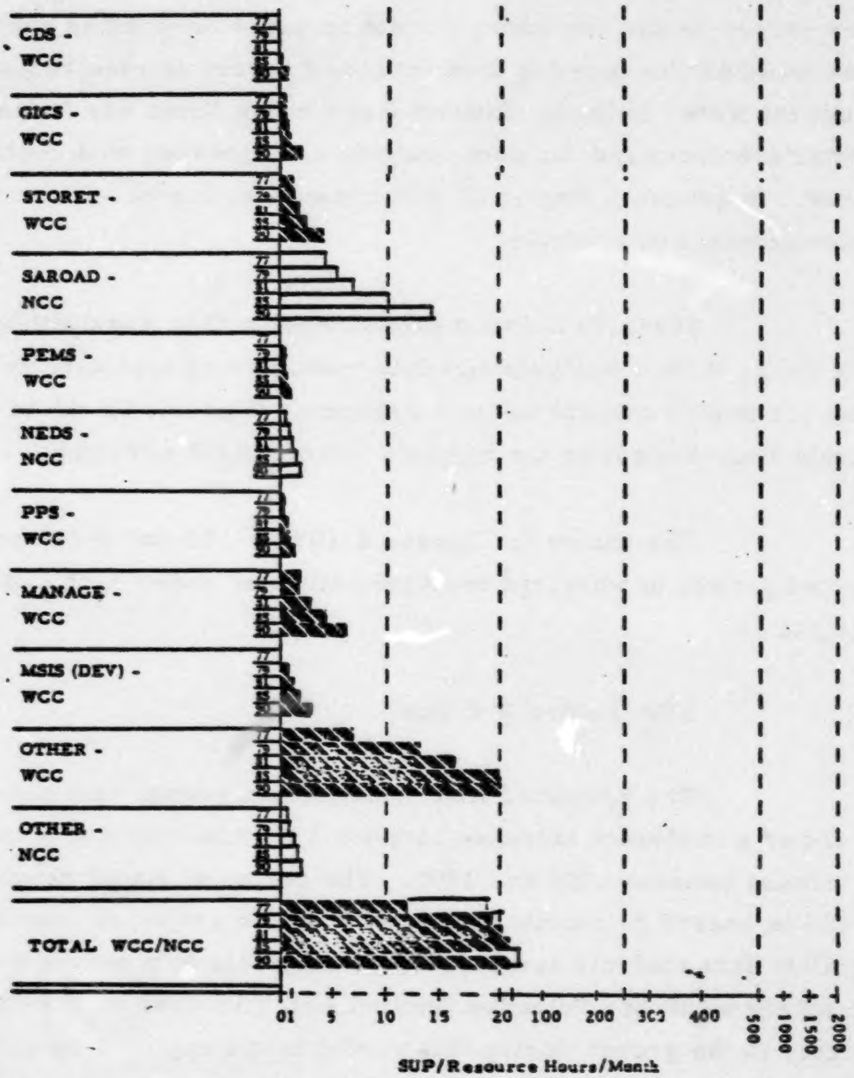


Figure 4-108. Region 8 Projected Workload
Scenario 3

I. EPA Region IX Office

The projected ADP timesharing growth rate for Scenario I shows a moderate increase between 1979 and 1990. These increases are caused by the continuing growth in usage of systems such as STORET and SAROAD for meeting data input and reporting requirements of the Federal Water Pollution Control Act and the Clean Air Amendments. Other systems used for data analysis and modeling will continue to grow. In general, Region IX will continue to increase most in data management and analysis.

Scenario II would impact Region IX's workload by increasing the usage of data analysis and data management applications in water and air quality control support systems. Scenario III would have relatively little impact on the region's current ADP activities.

The charts in Figures 4-109, 4-110 and 4-111 present projected growth in workload for ADP activities under each scenario in Region IX.

J. EPA Region X Office

The projected ADP timesharing growth rate under Scenario I shows a moderate increase between 1977 and 1985 and a more gradual increase between 1985 and 1990. The period of rising usage through 1985 is caused primarily by STORET due to projected increases in water quality data analysis and reporting of the data to meet the deadlines of the Federal Water Pollution Control Act. Another major contributing factor to the growth during this period is the region's on-going computerization of administrative activities, especially with the use of the Regional Management System. In general, ADP application will be increasing in data management and analysis, tracking and reporting, and program support.

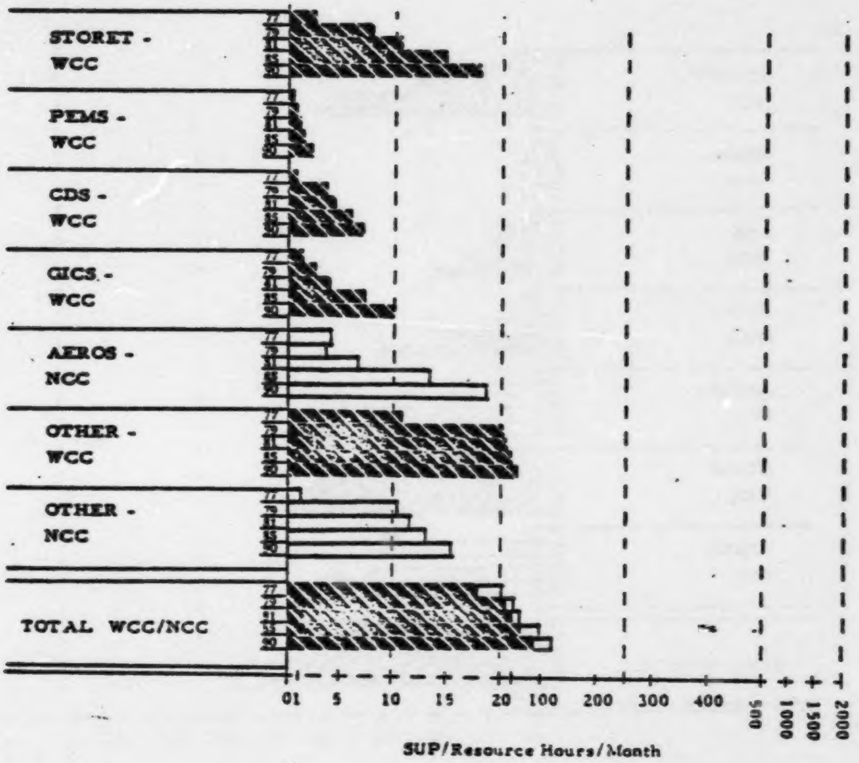


Figure 4-109. Region 9 Projected Workload
Scenario 1

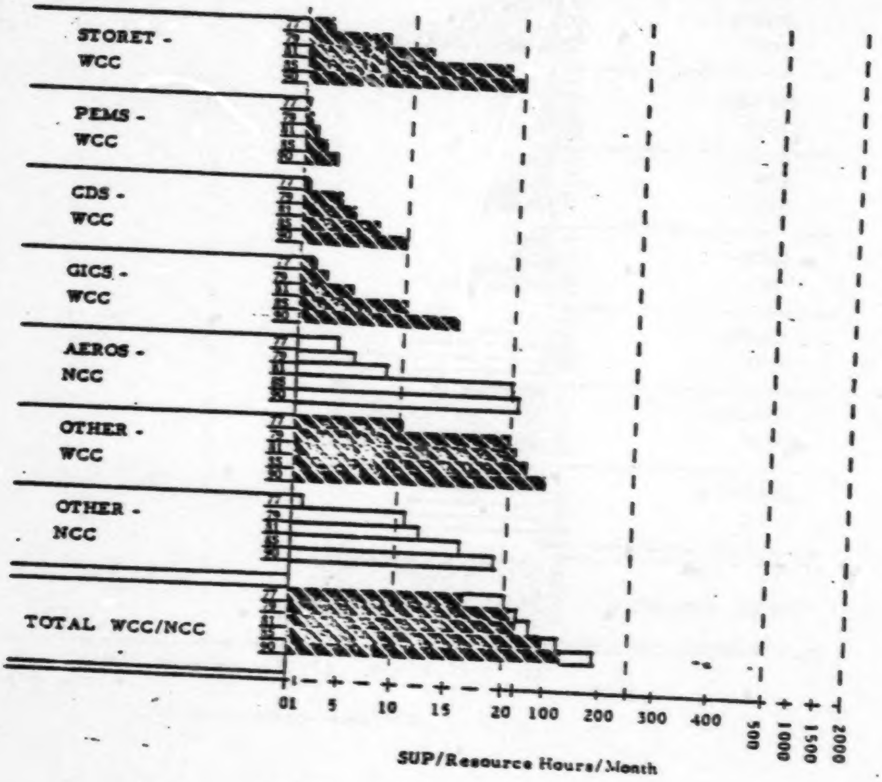


Figure 4-110. Region 9 Projected Workload
Scenario 2

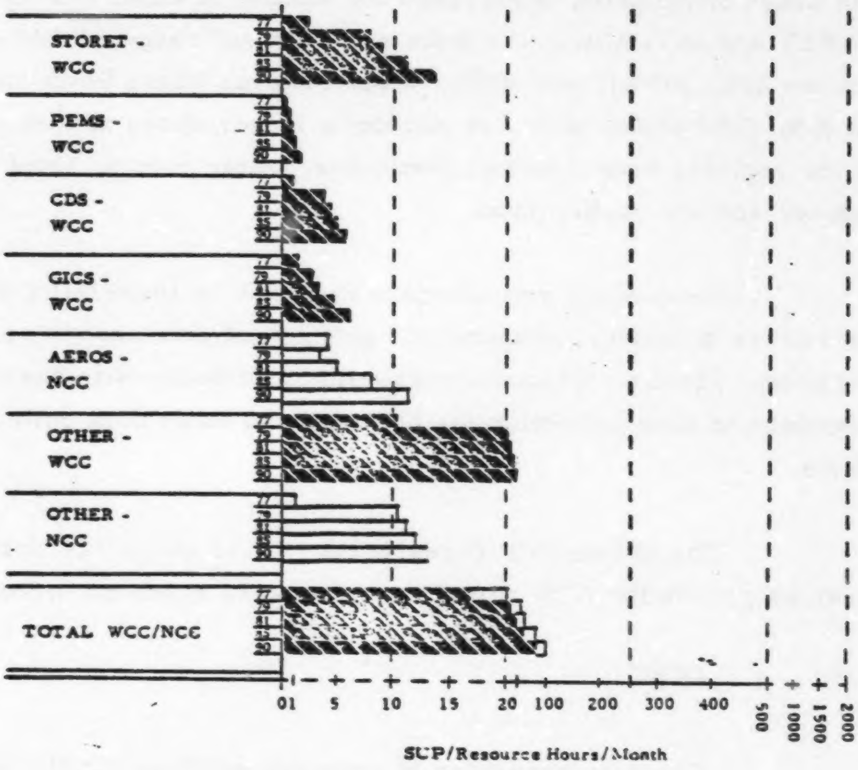


Figure 4-111. Region 9 Projected Workload
Scenario 3

The leveling off period after 1985 will be caused by the region's increasing reliance on the in-house minicomputer and from maturity of the developing administrative systems.

State use of EPA's data systems is centered on STORET. This usage is expected to increase the amount of water quality data in STORET and to facilitate the State and Regional responsibilities under Sections 208, 303(a), and 305(b) of the Federal Water Pollution Control Act. The states will also conduct a larger share of data collection for the regional monitoring of pesticides, water supply, toxic substances, and air quality data.

Scenario II would impact Region X by increasing workload in all areas in support of standards setting and data analysis and reporting. Scenario III would cause minor cutbacks with heaviest reductions in data collection for STORET and other data collection efforts.

The charts in Figures 4-112, 4-113 and 4-114 show projected workload growth for ADP activities under each scenario in Region X.

4.5 COST

The data presented in previous sections of this document represent the computer workload required to meet the EPA mission needs. The translation of workload to dollar cost is based on the pricing formula used by the individual facilities. To obtain these cost estimates for 1977, Informatics used seven months of actual billings from OSI and NCC to extrapolate the cost for a full year. Cost projections for 1979 (which reflect the current pricing policies) were provided by the ADP activity manager. Long-term costs (1981-1990) were developed using the projection model, with management factors. Total costs represent only the applications operated at the two computer facilities; overhead costs are not included for either WCC or NCC.

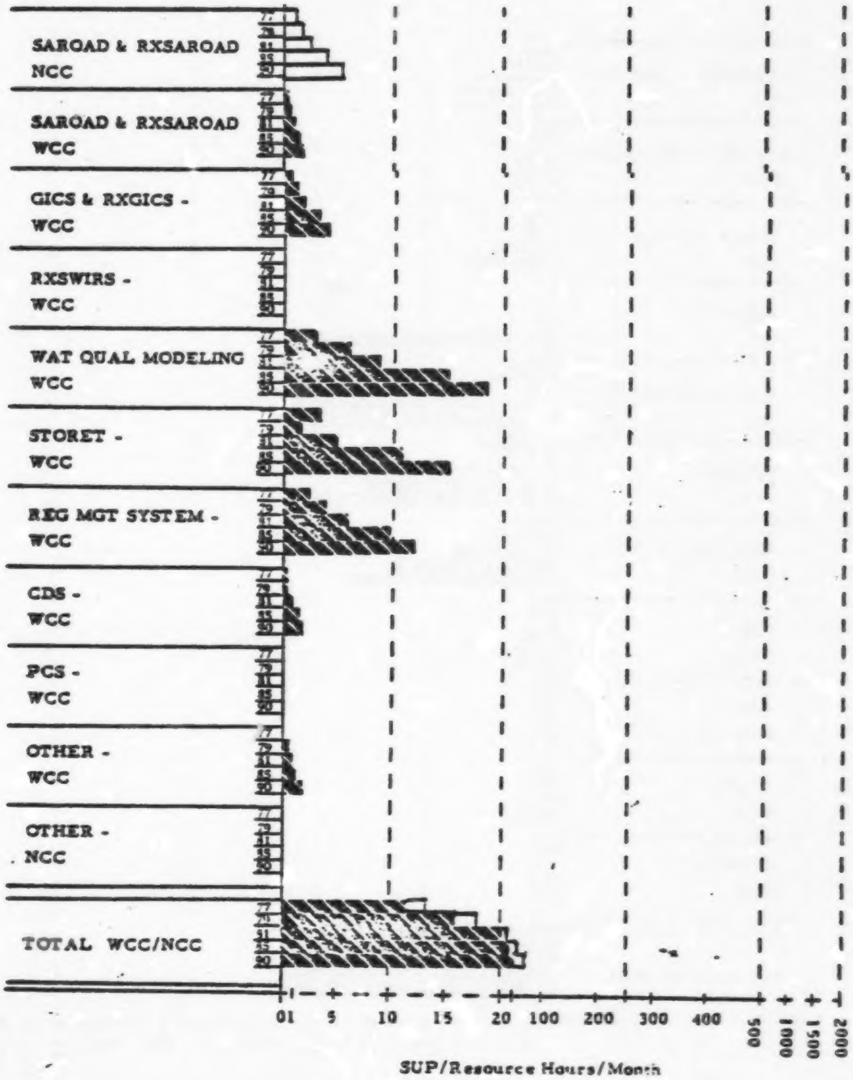


Figure 4-112. Region 10 Projected Workload
Scenario 1

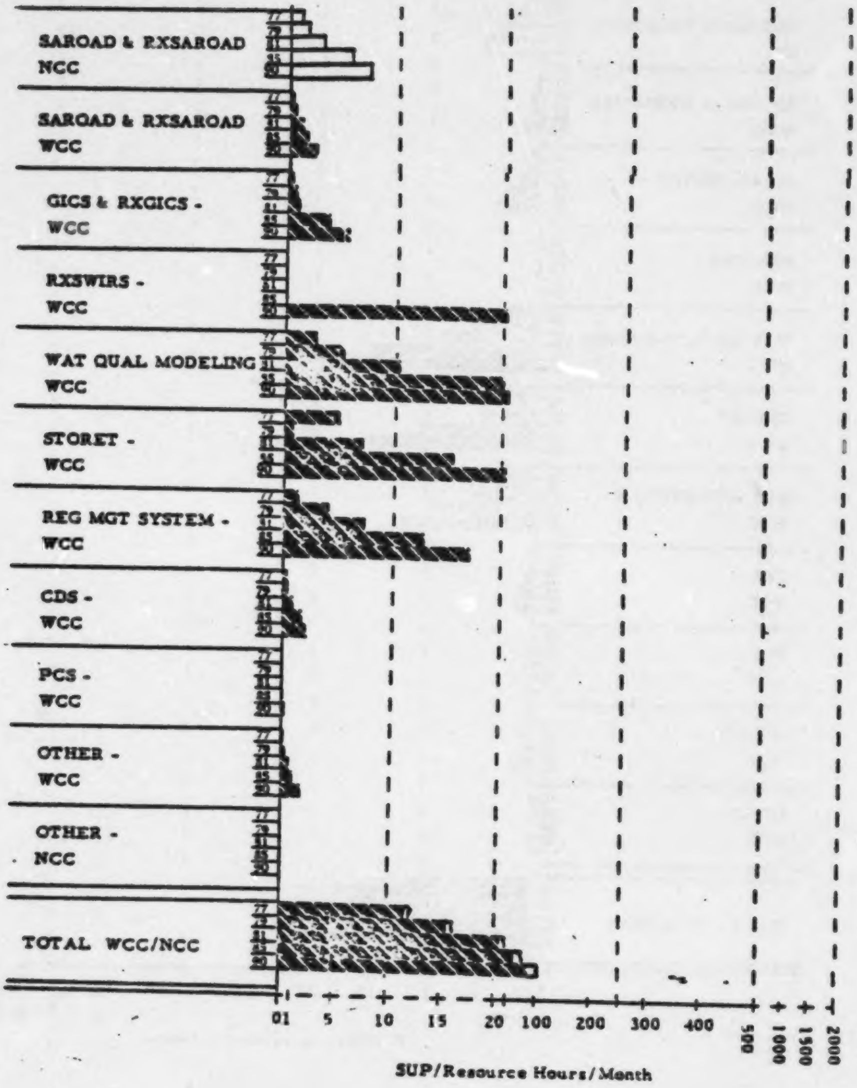


Figure 4-113. Region 10 Projected Workload
Scenario 2

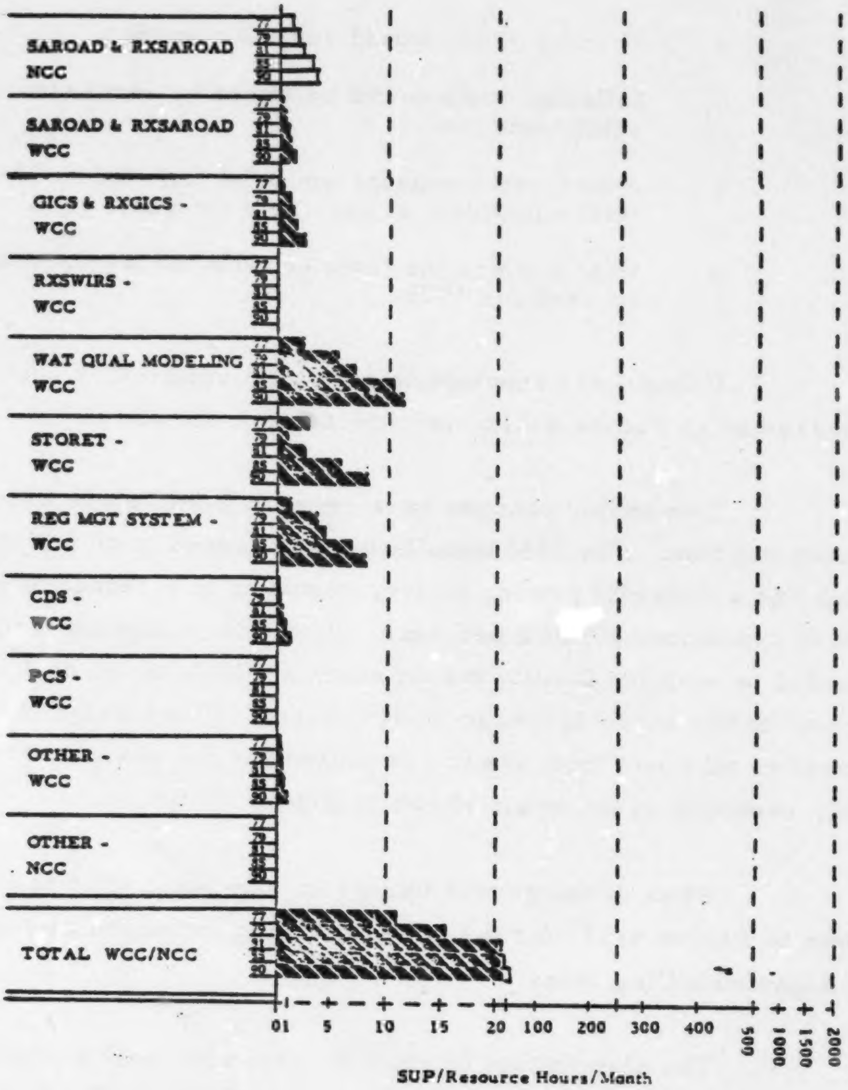


Figure 4-114. Region 10 Projected Workload
Scenario 3

To develop long term costs some basic assumptions were necessary, which were:

- Pricing policy would remain constant.
- Inflation costs would be offset by decreases in equipment cost.
- Added requirements would be fulfilled by identical equipment at basically the same cost.
- Cost projections from activity managers would be used for 1979.

Using these assumptions the total application cost per year is presented in Figure 4-115, for scenarios I, II, and III.

Two major changes have recently taken place which affect pricing policies. The IBM installation was moved from OSI to COMNET which has a different pricing policy, resulting in a reduction in IBM cost of approximately 20% per year. Secondly, a new contract was awarded to perform facility management at NCC, which will result in approximately a 15% increase in NCC costs. These price changes were applied to all costs from the two facilities for the years 1979 through 1990, resulting in the totals shown in Figure 4-116.

Plots of the growth curves for the years 1973 to 1990 are shown in Figure 4-117 for the existing billing rates and in Figure 4-118 the adjusted billing rates.

The distribution of costs by organizational element (AA) for each year and each scenario is shown in Figures 4-119 (Scenario I), 4-120 (Scenario II) and 4-121 (Scenario 3). On these charts the blank areas of each years' value represents the Univac cost and the lined areas the IBM cost. Total cost is indicated for each year. To obtain adjusted cost, the IBM cost at WCC should be reduced by 20% and the UNIVAC cost at NCC increased by 15%.

Year	SCENARIO I (Normal)			SCENARIO II (High)			SCENARIO III (Low)		
	IBM	UNIVAC	TOTAL	IBM	UNIVAC	TOTAL	IBM	UNIVAC	TOTAL
1977	7,804	3,565	11,369						
1979	13,245	5,742	18,987						
1981	19,821	7,046	26,867	25,617	8,660	34,277	16,366	5,981	22,347
1985	30,369	10,881	41,250	44,158	15,457	59,615	22,062	7,842	29,904
1990	39,913	14,471	54,384	60,189	22,177	82,366	27,539	9,862	37,401

Figure 4-115. Total EPA Cost ($K) by Year Original Prices

Year	SCENARIO I (Normal)			SCENARIO II (High)			SCENARIO III (Low)		
	IBM	UNIVAC	TOTAL	IBM	UNIVAC	TOTAL	IBM	UNIVAC	TOTAL
1977	7,804	3,565	11,369						
1979	10,596	6,603	17,199						
1981	15,857	8,103	23,960	20,494	9,957	30,453	13,093	6,878	19,971
1985	24,295	12,513	36,806	35,326	17,775	53,101	17,650	9,018	26,668
1990	31,930	16,642	48,572	48,151	25,504	73,655	22,031	11,341	33,372

Figure 4-116. Total EPA Cost ($K) by Year Adjusted Prices

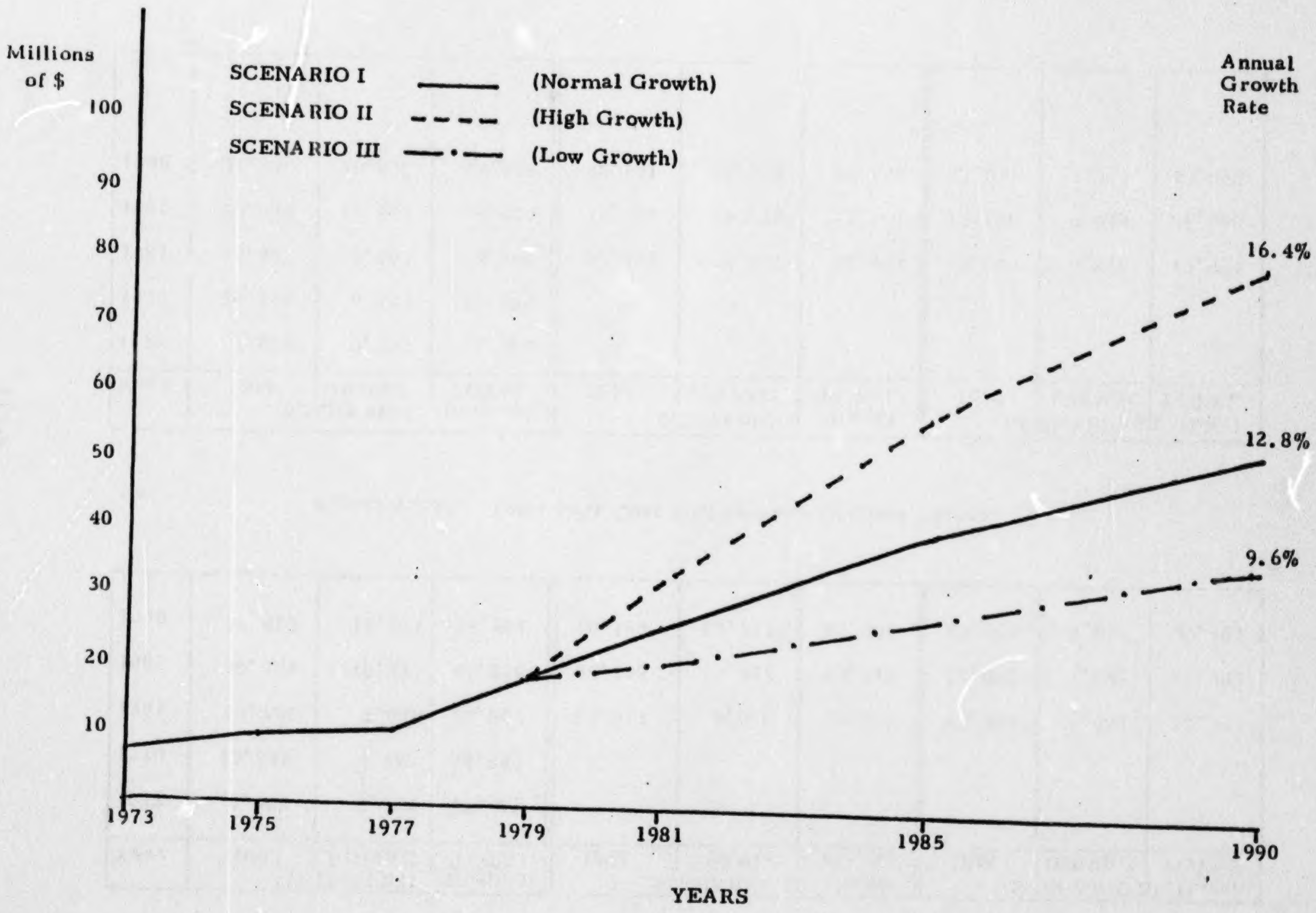


Figure 4-117. ADP Activity Cost Based on Current Billing Rates

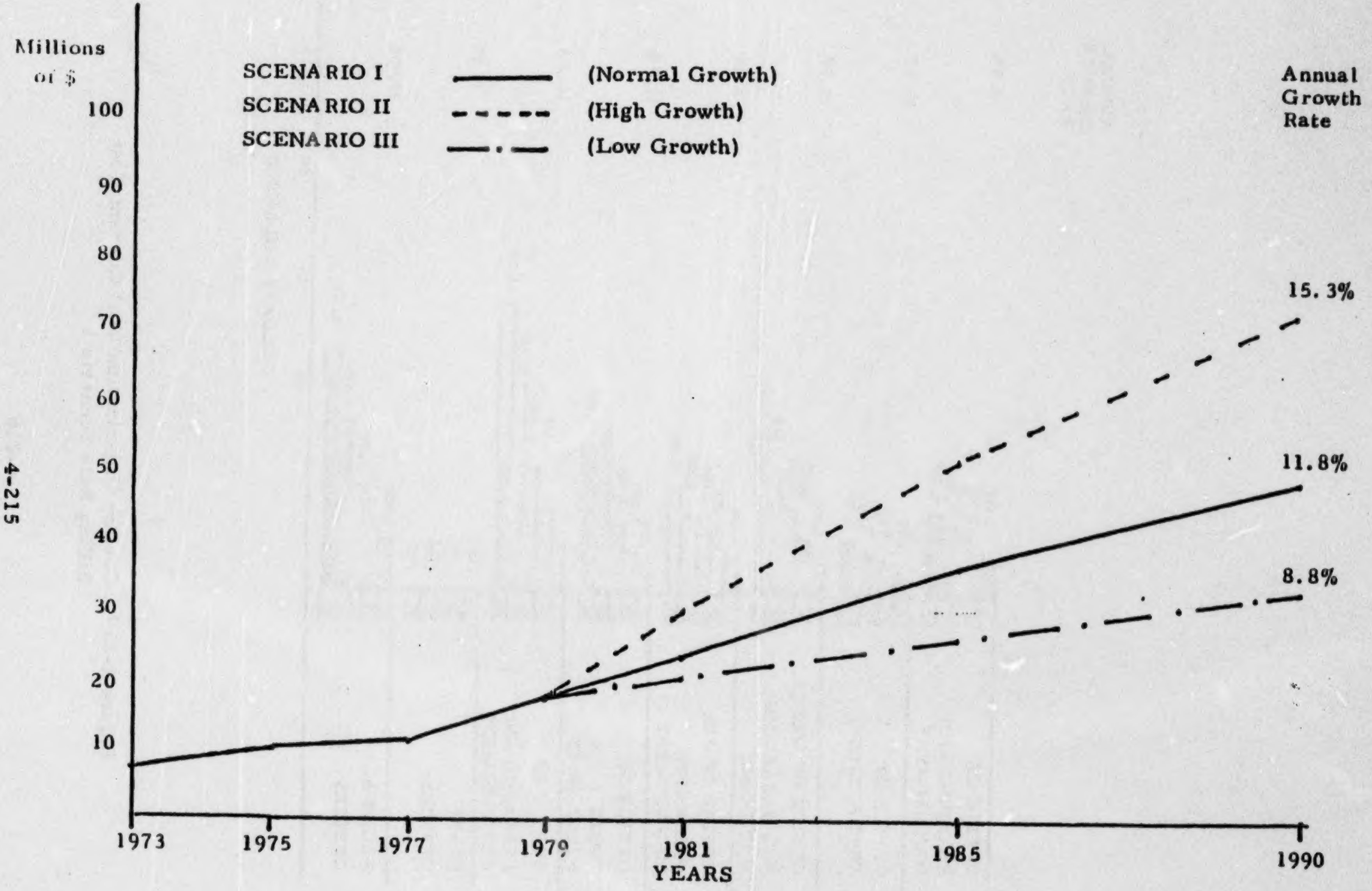


Figure 4-118. ADP Activity Cost Based on Adjusted Billing Rates

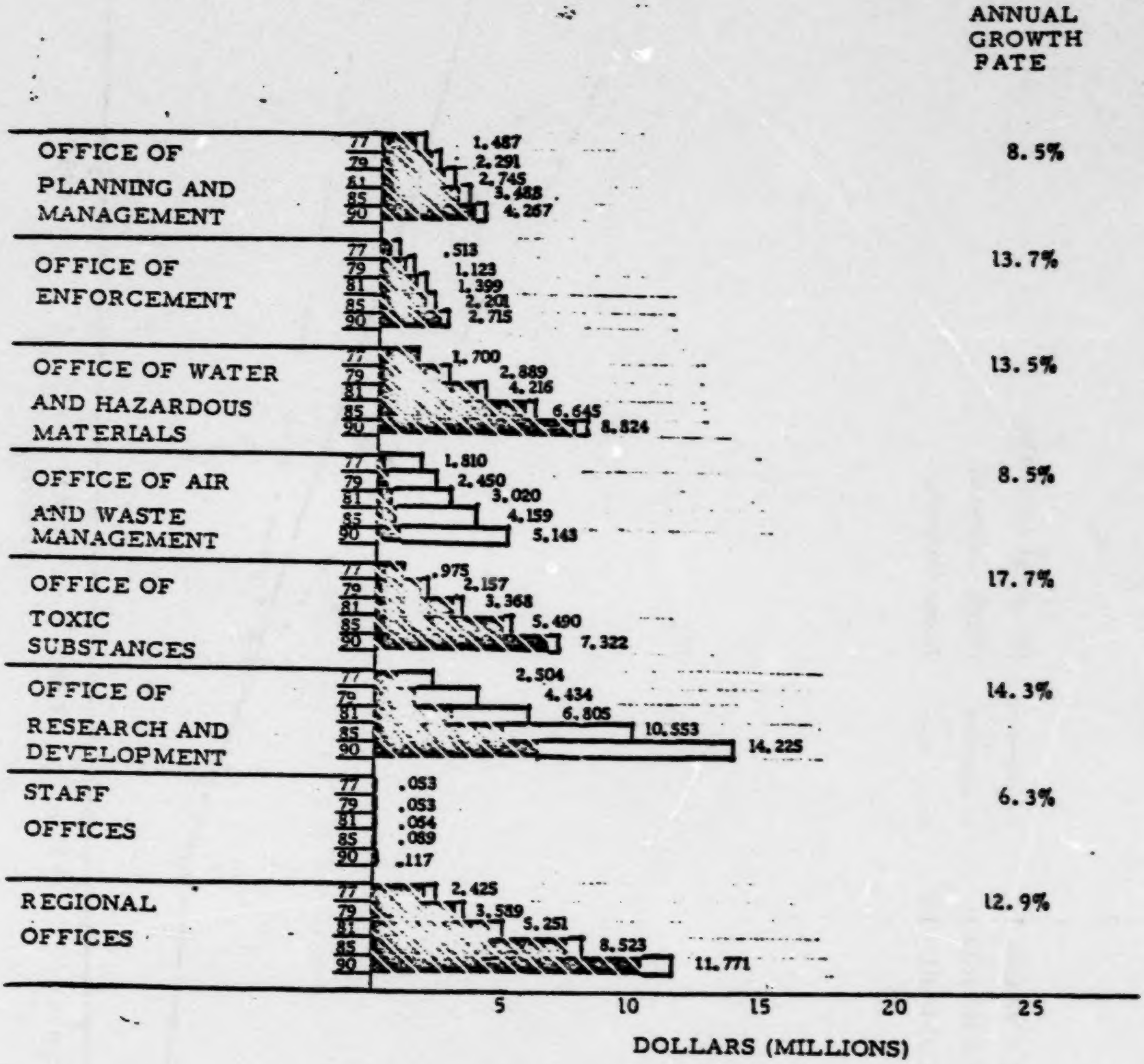


Figure 4-119. Cost by Organization (AA) Current Cost Billing Rate Scenario 1

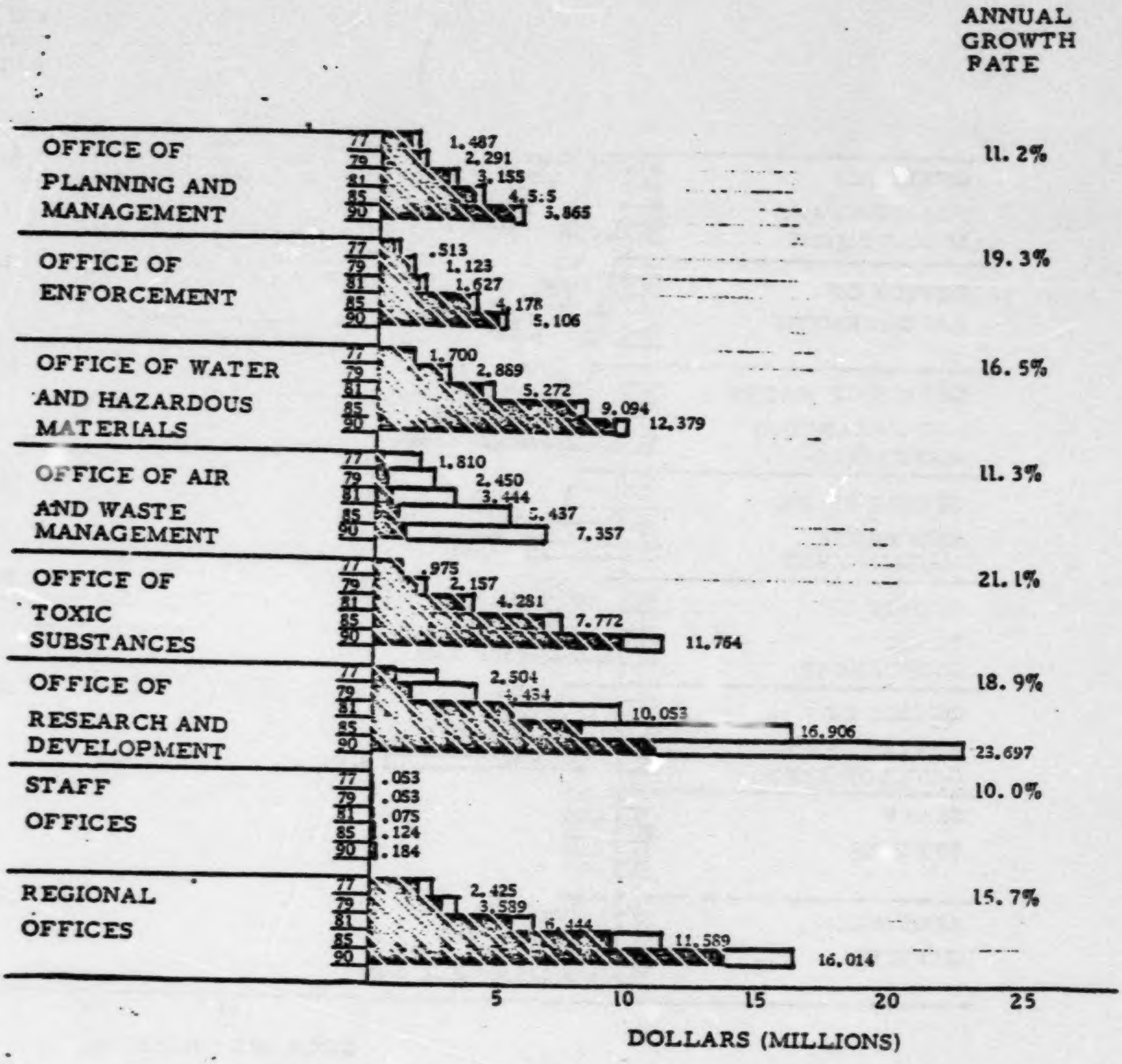


Figure 4-120. Cost by Organization (AA) Current Cost Billing Rate Scenario 2

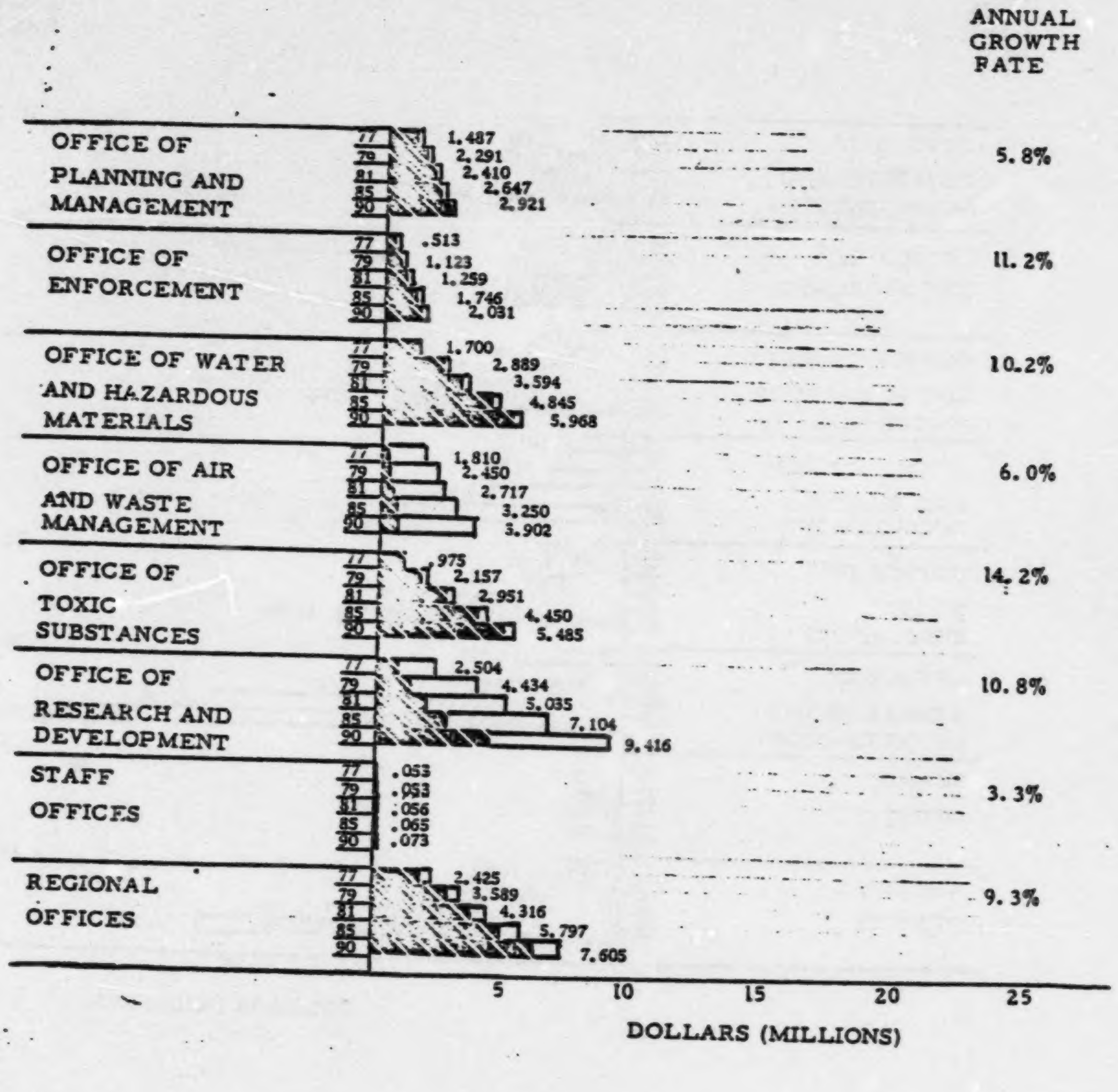


Figure 4-121. Cost by Organization (AA) Current Cost Billing Rate Scenario 3

SECTION 5

MAJOR CONCLUSIONS OF THE STUDY

5.1 MISSION CHANGES AND TRENDS IN ADP USAGE

Mission changes and ADP trends in the projected period through 1990 have been examined from several aspects. In addition to EPA management predictions for changes in missions and programs in the next decade, macro influences on these forecasts have been analyzed for potential impact. These include factors and trends involving the national economy, the public attitude toward environmental safeguards, legislation and others. The future forecasts of changes and trends presented in this section were obtained during the ADP survey of EPA Assistant Administrators, Deputy Assistant Administrators, and laboratory and regional office management personnel.

5.1.1 Macro Influences on EPA Growth

EPA management views of external influences on Agency futures tend toward a slightly more favorable growth pattern than in the past, particularly for programs in toxics and other health risk areas which will continue rapid growth. National economic problems and resource shortages may curtail lower priority programs due to budget pressures and redirection of agency resources to higher priority programs.

The ADP management level survey focused on several key areas of influence external to EPA that could have significant impact upon future forecasts of missions, programs, budget levels, and ADP usage. These external or "macro" influences include the health of the national economy, public attitudes toward EPA programs, future legislative activity, budget restrictions, and the way in which EPA responds to alternative future scenarios. Each of these influences is examined below.

National Economy. The general concensus among EPA Assistant Administrators was that the economic outlook in the next decade is clouded by unemployment/inflation interaction, energy policy decisions, limitations in land and resources, and potential food shortages caused by a variety of factors. The feeling was that the economy will continue to slowly grow, however, and that growth may improve in the latter part of the 1980's and continue to the end of the century. Potential economic problems impacting EPA programs involve energy and food shortages and attendant needs to produce more of these life-support resources over the short term.

Public Attitude. The opinion was unanimous among EPA management that public concern for the environment remains high and continues to grow, particularly in health affects. The public appears to have matured in their outlook towards ecological activities as costs of achieving environmental objectives and needs for government spending are realized and accepted. The only potential major problem in public attitude appears to be relative to the depth of energy and food shortages in the future. Public desires for maintaining lifestyles may conflict with environmental concern if familiar patterns of living are threatened to any great extent.

Legislation. The need was expressed for a comprehensive law along the lines of the Toxic Substances Control Act that would supercede all existing environmental acts and provide a mandate for EPA to develop a total plan responsive to all aspects of environmental problems. Short of this, fine tuning to resolve differences and integrate existing laws is necessary. New legislation expected to become law for EPA program areas in the foreseeable future includes the following:

- Control of naturally occurring radiation, waste, and radiation resulting from medical treatment (expected in 2-3 years).
- Great Lakes studies as set forth in the current Nelson Bill.
- Sludge control, possibly as an amendment to the Resource Conservation and Recovery Act of 1976.
- Control of non-point source water pollution, as an additional amendment to those stated in the Federal Water Pollution Control Act Amendments of 1972.
- Land use, possibly in 5-10 years with EPA mandates to set policies and guidelines for state use.

Other potential legislative actions impacting EPA are in the creation of economic incentives for compliance to environmental regulations, the separation of long term research and development from short term program support areas, and energy legislation affecting environmental regulations and enforcement.

Budgets. Total EPA budgets are expected to keep pace with inflation, with the Agency growing faster than most other Federal agencies. To some extent this trend will cause shifting of more funds to states and the changing of missions from standards setting to standards enforcement. There will be selective budget increases of substantial amounts in toxics and pesticides programs. The total EPA research and development budget is expected to grow, especially in energy programs related to coal use. ADP budgets are expected to become a greater part of many program budgets, particularly in toxics/water/noise enforcement, toxics control, solid waste, water, and water supply areas in response to program requirements of existing legislation.

Alternative Future Scenarios. Three scenarios were set forth covering a range of alternative futures for EPA in the decade ahead. Scenario I, the normal growth scenario, is an extrapolation of previous history equivalent to today's level of agency activity and growth, and projects a continuation of current economic levels, energy programs and support for environmental programs. Scenario II, the high growth scenario, considers that demands for environmental programs would escalate due to increased public concern and legislative action possibly stemming from pollution disasters of national significance. Scenario III, the low growth scenario, projects the situation where critical shortages of energy, food, or water, or extreme economic problems would impact agency programs and place high priorities on production of resources.

Due to the influence of past trends, management inclines toward a perception of the future in terms of a continuation of conservative growth and slow but steady expansion for the Agency, i.e. Scenario I. Many of the forecasts of mission and program changes in the years ahead plus predictions of national economic trends, public attitudes and legislation support this view. It appears much less likely that Scenario II and major environmental disasters causing higher activity levels in the Agency will occur, particularly in view of steadily increasing environmental controls and safeguards. On the other hand, Scenario III conditions are more clearly discernable as problems in the national economic outlook and resource shortages loom as distinct possibilities.

The nature of the stimulus will determine the direction required of EPA in future events. Economic downturns of a significant or prolonged nature would impact total budget levels and curtail all but the high priority programs. Major environmental problems resulting in severe health risks would cause legislative emphasis and program thrusts in the areas affected. Shortages of energy, food, or water may have less overall affect on total agency workload than initially realized, and may increase efforts in certain programs, particularly in health risk areas such as toxics monitoring, water supplies and water recycling programs.

In summary, EPA management views of EPA futures tend to support Scenario I, the normal growth scenario. In the case of high growth, Scenario II, the agency would respond by increasing its activities overall, with special emphasis on major stimulus areas. In the event of severe national problems leading to low growth, or Scenario III, the agency response would be one of selective growth for programs involving toxics, pesticides, water, energy, and solid waste. Programs in areas posing less potential health risk and peripheral programs such as technical assistance and training may not fare nearly as well.

5.1.2 Mission and Program Changes

Major shifts in future missions and priorities are in those programs impacted by national energy policy, legislation in health risk areas, and the increasing need to focus on functions at the local level.

Future changes in missions will follow the directions mandated by legislation and a continuing decentralization of program responsibility to the regions and states. Changes in priorities and redirections in the major program areas will influence future ADP activities and associated workload. Changes in major EPA program areas and support functions are summarized below.

Air. Regions and states will increasingly perform more air data collection and processing with resulting reductions in centralized handling of raw data. Increased activity will be performed in development of guidelines and economic analysis of standards and enforcement methodologies. Air monitoring will cover more pollutants but the number of collecting stations will decline.

Water. Water supply programs are a major growth area, eventually covering 650,000 water supply sources and facilities for tracking and monitoring toxic spills and discharges. More integration of programs (cross-media) will take place, such as between water and toxics programs to enable association of water pollution problems with toxic product regulations and effluent treatment. Potential new programs include wetlands preservation, the impact of energy programs on water quality, ocean exploitation and control of hazardous materials. The clean lakes program should experience rapid growth if pending legislation is enacted. More water quality data collection and processing responsibility will be transferred to the states.

Solid Waste. A major growth area with expanding programs in technology development and transfer, local assistance projects, cost/benefit and policy studies. A comprehensive data base project for public dissemination of information will be developed covering available technology in resource conservation and recovery, facility operation and management.

Toxic Substances. The largest growth area in EPA, with programs for chemical testing, hazard assessment, regulations development, and evaluation of chemical substances. Increasingly, cross-media integration with other program data bases will take place, particularly in air, water, solid waste, pesticides, and water supply programs. The toxics program will require national coordination and interfaces with HEW, DOL, FDA, NIOSH, and CPSC.

Pesticides. Will increase in importance in relation to the toxics program and more intensive studies of human health effects. Over the long term more responsibility will shift to states for monitoring and control.

Radiation. Expected new legislation focusing on naturally occurring radiation, radioactive waste handling, and radiation in medical treatment will result in program priorities in these areas. Water supply and ocean dumping activities will increasingly become a factor in radiation programs.

Noise. Major program thrusts are expected in Federal coordination of noise projects, a national system of standarized local noise data bases, local assistance projects in noise control, and research and development activities. Federal noise authority at the state and local level is expected in two years.

Enforcement. More state and local enforcement responsibility is expected, with EPA handling audits and interstate cases. Trends are to self-monitoring and reporting by industry, with priorities on economic incentives for pollution control. Priorities will shift from air and water to toxics tracking, and development of chemical characteristics data bases. Toxics compliance monitoring will require novel approaches to avoid voluminous on-site inspections. Water enforcement activities will increase as permits become more complex and more parameters are covered.

Research and Development. Major program changes involve increased emphasis on energy (coal use), sludge disposal, technology transfer, and local technical assistance activities. Quality assurance in data collection will be increasingly stressed as national data bases become more widely used across program lines.

Regions and States. Regions will change from the role of performer to one of auditor for many state and local activities. Regions will have more responsibilities in enforcement auditing, ambient and health effects monitoring. States will have more responsibilities in data collection for air, water, water supply, and pesticides programs. States will also assume permitting functions in the water program and more interfacing with the U.S. Coast Guard for oil spills.

5.1.3 Trends in ADP Usage

Future trends in ADP usage will be influenced by needs for improved data sharing and transfer across program lines, decentralization of programs and ADP workload to the regions, and increasing analytical functions.

ADP activities expected to be stressed in future efforts are primarily in the areas of data analysis and modeling for guidelines development, economic and exposure analysis for risk/benefit and cost effectiveness studies, and integration of data bases across program boundaries for cross-media programs such as toxics. Integrated or shared data base strategies will require increased emphasis on upgrading quality of data collection and input operations. Standardized data collection procedures will become increasingly important as data base integration progresses. Enforcement programs will require more sophisticated techniques for tracking and regulatory functions in programs such as toxics. The trend toward distributed processing and the use of minicomputers in regional offices and laboratories may be an increasing factor in future ADP operations and will require control over software development and local operations protocols to ensure continuity of overall EPA network operations.

Distributed Processing. With greater decentralization of program activities to regions and states, increasing ADP workload may enable the trend to regional level minicomputers to continue, now in operation in three of the regions. Minicomputers are currently in use in many EPA laboratories and this trend may also continue as total laboratory processing control systems are developed. The primary use of minicomputers in labs and regions is in data collection and preprocessing for input of data into central time-sharing systems. Distributed processing minicomputer systems will require the development of standardized software and operating procedures to maintain consistency and quality in data entered into centralized, integrated data bases.

Shared Data Bases. The toxics program is expected to force an end to the separate media approach and cause more data base interfacing and improved data transfer within EPA and with other Federal agencies sharing similar programs. Greater use of data bases will only occur as quality of data and accessability improves. With more diversity in locations submitting data, incentives will be necessary to ensure that states and regions supply quality data according to prescribed rules. Software development and technical assistance programs would further these incentive efforts, as would the utility of such accessable data to states and regions requiring more information for their increasing role in the decentralization process.

5.2 GROWTH HISTORIES

Based upon past history, the projected growth rate for EPA falls between extrapolations for high growth and lower, more controlled growth periods. Projected EPA growth rates will not be as high as another Federal agency (NIH) has experienced in the past.

Since the methodology used to project ADP time-sharing growth at EPA cannot be calibrated using techniques applied to other types of models, an alternative is to examine the results in terms of historical information from EPA and other agencies.

EPA thus far has gone through two distinct periods of ADP time-sharing growth. In 1973 through 1975 a period of what might be called unlimited access occurred. During this period, program managers began to realize that the computer could be a useful tool and because only limited ADP management controls were in effect, a period of rapid expansion transpired. In the 1975 through 1977 period this trend was severely controlled through hardware limitations and funding charge-back allocations. Discussions with EPA management in this survey revealed that the projected ADP usage beyond 1977 would follow neither of these paths but would fall somewhere in between. As shown in Figure 5-1 the projections in this report do fall in the range between the extrapolated values for the two historical periods. The figure shows only the WCC (COMNET) case but the NCC situation is similar.

Another comparison which proved useful was examining EPA projected ADP time-sharing growth with that of another agency. Data was available on usage at the National Institutes of Health (NIH) computer center which had its inception in 1967. This center's goal is to bring computational power to the laboratories and offices of NIH researchers and administrators throughout the country. Unlike many

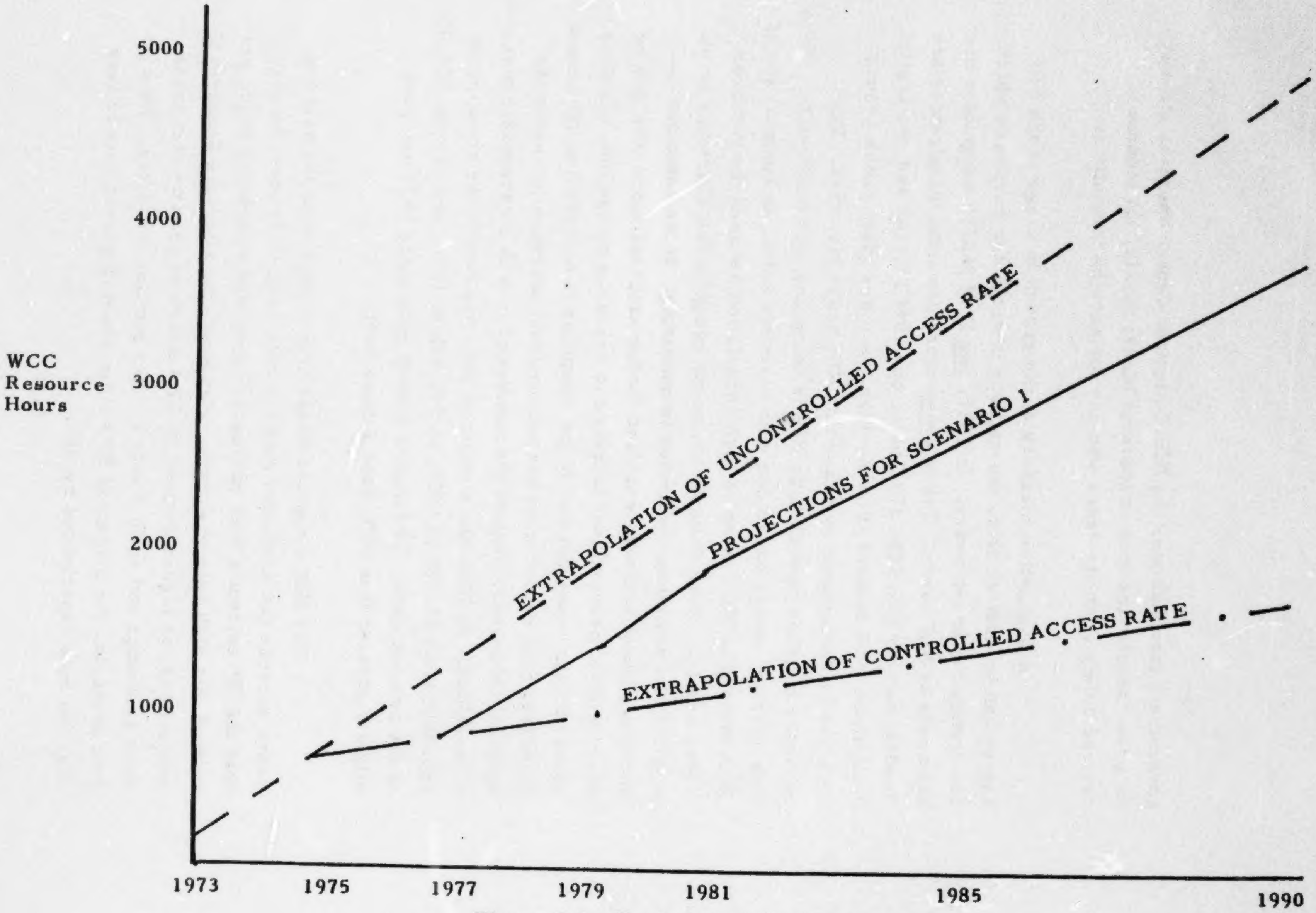


Figure 5-1. Projected WCC Growth Rates

government installations, the NIH Computer Center operates strictly on a fee-for-service (cost-recovery) basis; that is, its income is derived solely from its users who pay for service they utilize.

A qualitative measure of the growth in usage at the NIH center can be derived from the upgrade in computer hardware which has transpired in ten years. In 1967, two IBM 360/50 computers met the needs of NIH users. Today seven more powerful mainframes are needed; namely four IBM 370/168's, one IBM 370/145 and two Digital Equipment DEC System 10 computers. A more quantitative growth rate can be determined by examining NIH usage histories. The measure of usage published by NIH is computer jobs per month. While this does not equate one to one with resource units, an examination of EPA history at WCC shows a high correlation between the two over a long period. Some fluctuations occur based on the efficiency level at which the particular computer is operating. If the computer is operating below optimum workload (under-utilized) more jobs can be added without proportional increase in resource utilization, although some increase does occur. If the computer is already heavily loaded, increased jobs caused a higher proportional increase in resources utilized. However, overall the number of jobs is a reasonable measure of workload. At NIH, the number of jobs per month has grown from approximately 20,000 in 1968, to 100,000 in 1971, and to over 300,000 at the present time. The annual growth rate since 1971 has been slightly greater than 20% (see Figure 5-2).

The NIH computer usage growth rate over the past ten years exceeds the projected rate for EPA usage. It could be argued that the "President's War on Cancer" provided a mandate which permitted this high rate of growth. However, the alternate Scenario II projections for higher demand in EPA services assume that areas such as Toxics and Solid Waste become similar mandates. Even in this scenario, the projected EPA time-sharing growth rate is less than the rate experienced by NIH.

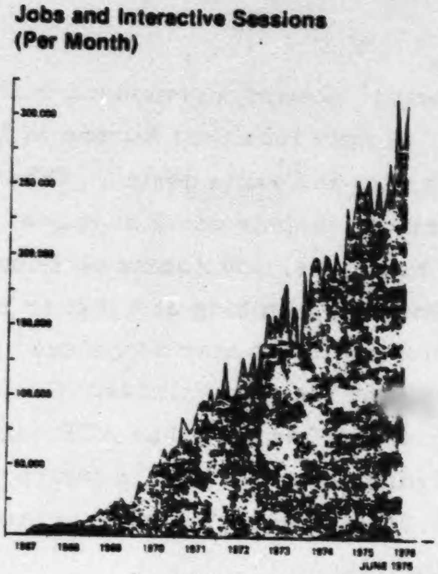


Figure 5-2

5.3 FACTORS OF INFLATION AND TECHNOLOGICAL INNOVATION

Inflationary trends in cost of ADP personnel and other services has largely been offset by technological improvements and reductions in the costs of ADP hardware, software, and communications.

When analyzing projected ADP workload far into the future, prudent planning requires that funding estimates reflect the value of dollars as they will exist in the long term. In a similar vein, technological improvements in ADP processing capability and corresponding reductions in the cost of ADP hardware and software must be considered as offsetting factors in the future cost of ADP services.

Inflationary trends in ADP services are related to many factors, primarily involving personnel costs which can make up a significant portion of total ADP costs. A recent national survey of

ADP industry salaries[1] showed a compound increase of 45.4% in the period 1970-1976, slightly less than Bureau of Labor Statistics consumer price index growth over the same period. Other areas of inflationary impact in ADP services include costs of space, utilities, supplies, furnishings, ADP hardware, and communications. Costs of space and furnishings are generally climbing at a higher rate than salaries although the inflationary effect may be reduced somewhat in the case of government owned or leased facilities. Costs of utilities and supplies are also climbing at a higher rate than ADP salaries and will remain a constant factor of inflationary impact in future periods, close to or higher than the 46.3% compound increase in the BLS consumer price index from 1970 to 1976.

On the other side of the inflationary spiral, ADP hardware costs have been steadily declining since the days of the first generation of computers. International Data Corporation estimates show that the average value of a computer in 1965 was $326,000, compared to $172,000 today and a projected drop to $112,000 in 1980. Although the advent of minicomputers in the early 1970's is hastening this decrease, the number of larger computers in the $5 million range is on the increase as large organizations install expansive data management systems and teleprocessing networks. Concurrent with the drop in hardware cost, significant improvement in computer processing efficiency has occured with high increases in internal speed and input/output functions. The net effect of these technological gains resulted in 1975 ADP hardware costs for mass storage of only 2% of equivalent 1960 costs, and a projected 1985 cost of about 10% of equivalent 1975 ADP capability[2]

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1. R. A. McLaughlin, "DP Salary Survey", Datamation (November 1976), pp. 61-63.

2. Wagner, F. V., "Is Decentralization Inevitable?", Datamation (November 1976), pp. 61-63.

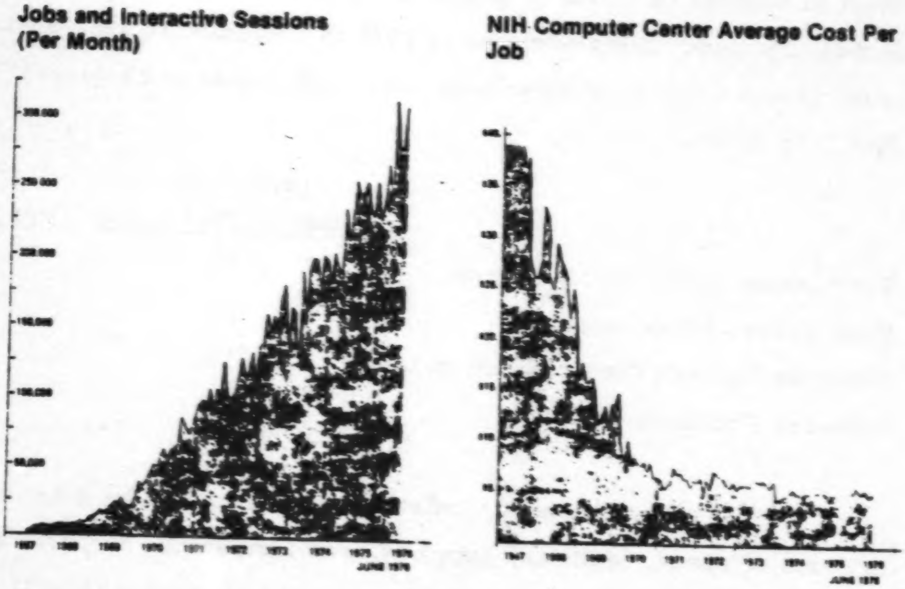
Communication costs have also been steadily declining, although the reduction in line charges has been far less than in other hardware areas. 1975 line costs are generally 61 percent of those in 1960 and 1985 costs are predicted to be 53 percent of 1975 rates. Costs of electronic components of communication networks will likely decline faster, more in line with the rate of reduction in ADP hardware costs. However, overall communication cost is expected to decline at a slower rate than any other area of ADP equipment.

Costs of software development and software products are also expected to decrease in line with the improvement in programming productivity from 1960 to the present. High level languages, systems software and programming aids have combined with increased competition and more disciplined and structured approaches to software development to provide this gain in productivity and reduction in software cost. Software product costs declined in 1975 to 6 percent of 1960 costs. This trend is expected to continue with 1985 costs equal to 33 percent of equivalent 1975 costs.

	1975 costs as percent of 1960 costs	1985 costs as percent of 1975 costs
Processing and Internal Storage	0.5%	20%
Fast Access Mass Storage	2%	10%
Common Carrier Communication Lines	61%	53%
Software Products	6%	33%

In summary, inflationary impact will be most heavily felt in costs of space, utilities, supplies, and furnishings for ADP services. Personnel costs for computer operations and support staff will also be a significant factor in cost growth. Offsetting these inflationary trends will be continued reduction in ADP hardware cost with lesser reductions in software products and telecommunications.

The net result of inflation and offsetting technological gains in hardware, software and communications may well be a negation of positive and negative influences. Using the past as a guide, experiences at the NIH Computer Center may indicate a trend for the future. This facility allocates all ADP costs on a chargeback arrangement where users are billed for services on a per job basis reflecting actual operating costs. After an initial period of heavy declines in per job cost due to upgrading and efficiency improvements, cost per job has remained relatively flat since 1971. This level has been maintained (see Figure 5-3) during a period of almost uninterrupted growth and the continued upgrading of ADP hardware and services. Inflationary impact has been negated by gains in hardware efficiency and declines in equipment prices.



Jobs and Interactive Sessions (Per Month)

NIH Computer Center Average Cost Per Job

Figure 5-3

5.4 PERFORMANCE AND SECURITY REQUIREMENTS

Several of the trends in ADP usage referenced previously in Section 5.1 impact the performance requirements of any new systems concept chosen to replace existing WCC and NCC facilities. Security requirements are an additional area of concern in new system planning, both from the standpoint of system integrity and in restrictions on the distribution of confidential data under provisions of the Privacy Act. Each of these performance requirement areas is examined below.

5.4.1 Shared Data Bases

All EPA centralized data bases should be simultaneously accessible, subject to security controls, and should be internally compatible with other computers and minicomputers in the EPA systems network.

The trend in accessing multiple data bases by a variety of users will result in a STORET-type of operation whereby EPA users and non-EPA users from states and other agencies will be able to draw data from a variety of files for further processing. Further processing of such data may take place at the central computer site or at the user's site on another computer, such as a regional mini. The performance requirement therefore indicates that all centralized EPA data bases be simultaneously accessible through the central computer(s), subject to security provisions guarding against invalid access. A further performance requirement would specify that data coding structures on the central computer(s) data base be compatible (or readily translatable to) the data coding structures utilized on the minicomputers in the EPA distributed processing network.

The performance goal of these requirements is that the location and coding structures in EPA centralized data bases be transparent to the user. This means that although data bases may be located possibly in different geographic areas and utilize differing internal coding structures, the user will access data and be able to process it as though all data bases were located on the same computer, in internal coding structures that are compatible with EPA distributed processing computers.

It should be noted that these performance requirements are stated for centralized EPA data bases only, that is, those that are stored and updated on central EPA time-sharing systems and used for nationally-oriented activities. Accessing of small local or regional data bases in a distributed processing network from locations outside the region is not considered a necessary requirement in the shared data base concept.

5.4.2 Access to Software Packages

All commonly used software packages (IRS, S2000, SAS, SPSS) should be available on all EPA central computers to enable processing of shared data bases.

Concurrent with the need for shared data base capability, there are urgent requirements for access to file and data base management systems (IRS, S2000) and statistical software such as SPSS and SAS for use with all centralized data bases. Currently these software systems are available but not always on the right computer, e.g., SAS is now only available on IBM systems at the WCC facility and other locations. With the advent of total data base accessibility under the shared concept, user access to these frequently used software systems will be a necessity. This means that all commonly used software should be operable or accessable on EPA computer(s) and that data extracted from any centralized data base can be processed using these software systems.

5.4.3 Interfaces to Distributed Processing Systems

EPA central system computers must be data compatible with field minicomputer systems and must have the communications workload and security handling capability for increases in traffic over the distributed processing network.

Minicomputers are currently installed in three of the regional offices and in many of the laboratories. More of the regions and labs will install these systems as their workload increases to justify the need. With the advent of shared data base capability and the growth of data analysis and tracking systems, the need to interface local minicomputers to the larger centralized computer systems will become important. Transfer of data will flow in both directions as local data is transmitted in to update national data bases and national data is returned in processed form. In some cases national data bases may be searched for data to be processed on local systems or to be incorporated into local data bases.

Any new hardware system must be equal to the workload generated by the maturing of regional systems and increases in message traffic over the network. The system must also be compatible in data coding structures and formats, or at least be translatable via hardware or software conventions. Considerable care must be exercised over system integrity and security matters to ensure data base content and storage capacities are not abused.

5.4.4 System and Data Security

EPA central computer facilities should have the capability for enforcing strict security controls over system access, data base usage, and internal system operation to maintain overall system integrity and high levels of operating utility.

New EPA facility(s) must maintain strict security safeguards over the considerable increases in communications and data base activity that will come about as systems reach higher levels of utility and shared data base concepts are employed. Security over data base integrity must be enforced as more users access more data bases with increased frequency. Privacy of certain data bases must also be protected to ensure compliance with Federal law. Security provisions must include control over system access, data base access, and internal system operation. Each of these areas is discussed below.

- System Access: requires user to provide valid account/user identifiers and passwords for access to program libraries for running on-line and batch processing jobs. Further security checking should be provided by terminal identifiers and funding authorization checkpoints to ensure each location and organization in the network is cleared for use of the system and application programs requested. Detected abuse of any security checkpoints should be reported for further investigation.

- Data Base Access: in combination with system access controls, further security for data base access at both the file and data element level should be provided. Data base access can be categorized by levels of access including:

    - Public availability: no restrictions on access or updating.

    - Read only: cannot be updated or deleted without valid identifiers and passwords.

    - Private: can only be accessed by valid identifiers and passwords.

  These security restrictions should apply to all data bases in central EPA computer facilities and should be modified only by those organizations responsible for content and operation of the system supporting each data base. Detected abuses of any data base security checkpoints should be flagged for investigation.

- Internal System Operation: overall system integrity requires adequate back-up and secure physical storage of all data bases and user libraries on a regular basis. Strict controls over space allocations are also necessary to prevent overuse of system resources by a minority of users. Encryption of data transmitted over the communications network may also be required for certain critically confidential information. Program checkpoints should be provided not only for restart exigencies but for protection against misuse of system time and resources by inadvertent "runaway" jobs.

SECTION 6

SYSTEM ACQUISITION PLAN

6.1 INTRODUCTION

The purpose and objective of the EPA Planning Activity are to obtain the most cost effective computing/telecommunication resources to meet the EPA's computing requirements for the 1981-1990 time period. In July of 1977 the EPA Administrator established that all major system acquisitions in excess of $10 million would follow the A-109 (Major System Acquisition) process. The individual steps required to acquire a major system are:

- Mission analysis, statement of agency needs in the context of mission, resources and priorities, mission needs must be presented in functional terms, not hardware;
- Exploration of alternative system design concepts to obtain the benefit of industry innovation and competition, and to identify the most cost beneficial system design to meet agency needs;
- Competitive demonstration, test and evaluation of a part of the system to reduce risk and to determine the most cost beneficial system design;
- Full-scale development/initial production, conversion of existing applications to the selected system design concept and selected hardware;
- Production, full-scale operations of all existing systems and development of new applications under the selected system design and hardware.

6.2 MISSION ANALYSIS

OMB Circular A-109 requires a continuing analysis of current and projected future mission requirements, technological opportunities, overall priorities and resources that are involved. When the analysis identified a deficiency in the existing agency capabilities or an opportunity to establish new capabilities in response to a technologically feasible opportunity, this will be formally set forth in a mission need statement.

EPA has recently conducted a detailed study of their current and future ADP needs. The results of this study are documented in three separate reports dealing with different aspects of the total needs. They are:

- Consolidated System Study, which presents the detailed computer workload for all current EPA computer applications and projects future workload for the years 1979, 1981, 1985 and 1990.
- Consolidated Telecommunications Study, which presents the detailed telecommunications workload by individual location for all current EPA computer applications and projects future workload for the years 1979, 1981, 1985 and 1990.
- Conversion Study Report, which presents the impact upon EPA of converting existing ADP activities operated at the two existing facilities to upgraded hardware of either the same type or other types.

This document is the Consolidated System Study and presents the total current and projected computer workload. The future computer workload exceeds the existing computing capabilities and must be expanded to meet the mission support needs of the agency. The study addresses each of the existing major applications and confirms their mission support requirements. New ADP activities (both replacement new systems and new activities) are identified and associated with the mission. Workload requirements for all systems are projected into the future (1979-1990). This document presents the workload which must be met during the next thirteen years in IBM 370/168 and UNIVAC 1110 equivalents (existing hardware) based on actual existing operations and future projections.

The combination of the Consolidated System Study, the Consolidated Telecommunications Study and the Conversion Study provide a total statement of needs in functional terms. These documents present the missions to be accomplished, the agency organizational component responsible, support requirements by year, detailed workload and cost required to support the individual activities and summaries by organizational element, and any special operating constraints associated with the activity. These three documents fulfill the total Informatics Requirement under the contract, all other efforts leading to the final procurement of the system will be performed by EPA.

This total definition of mission needs is to be submitted to the EPA Administrator for approval and submission to Congress in accordance with OMB Circular No. A-10. Congress has the responsibility to consider the agency needs and identify any issues requiring debate early in the acquisition process before commitment of major resources by EPA.

6.3 EXPLORATION OF ALTERNATIVE SYSTEM DESIGN CONCEPTS

Approval of mission needs by the administrator is the start of the actual major system acquisition process by granting authority to explore alternative system design concepts to meet the needs of the agency. This does not mean automatic approval of an acquisition, for Congress still must approve the agency program and provide funds. The exploration of alternatives can be a parallel effort with the congressional review.

As a part of this activity, the EPA administrator must name a program manager for the major system acquisition process. It will be his/her responsibility to establish the program objectives including capabilities, cost and schedule goals. A written charter will be developed which defines the authority, responsibility, and accountability of the program manager. The program manager should be provided with a staff to perform the many functions for which he/she has responsibility.

The first area of responsibility is the development of an acquisition strategy. The acquisition strategy plan is the primary planning tool which goes to the General Services Administration (GSA) for delegation of authority. This plan is used to make EPA management and industry aware of the EPA program and schedule. It must contain detailed statements of goals and objectives, schedules and all other considerations. The plan will provide for maximum competition in the acquisition process and establish the criteria for evaluation of alternatives.

The development of alternative system design concepts to satisfy the approved mission needs will be accomplished through a formal request to industry (RFP). This solicitation should contain a complete statement of mission or required capabilities, schedule objectives, cost objectives, and operating constraints. The three documents developed as a part of the statement of needs should be made available to all prospective bidders. EPA should establish a detailed briefing for industry to present their plan and discuss details. Every effort should be made to obtain the broadest base possible of industry participation in this concept development effort.

The RFP should be funded at a level to permit industry to recover most, if not all of their cost expended in developing their concept.

This should be a multiple award contract with selection being made on the basis of proposed concept and ability to accomplish stated objectives. Multiple concepts should be considered, particularly those innovative ideas which may be cost beneficial to the government. The time permitted to perform the detailed concept design should be adequate to permit the many trade-off analyses to be accomplished (5 to 9 months), including those of purchase vs lease, government vs commercial equipment, and etc.

The acquisition strategy document must contain all criteria for selection of system design concept contractors. This criteria must be made available to industry both in the briefings and in the RFP. Selection should be made by a panel of experts within EPA based on these established ground rules. The relative weight of technical scoring and cost should be expressly stated in the evaluation procedure specified in the RFP.

EPA must provide all selected contractors with that information necessary to perform the detailed system design concept. This will include all associated documentation and special computer runs of each installation containing information regarding all operating systems and computer programs. Any special considerations, such as requirements for use of existing or new data base management systems, should be a part of the RFP and where new requirements are established after the RFP, they should be provided to all selected contractors.

6.4 COMPETITIVE DEMONSTRATION

At least two of the system design contractors should be awarded contracts to demonstrate their concept. The detailed demonstration proposal will be a part of their system design concept final report. The purpose of this demonstration is to reduce or eliminate any risk associated with the concept and show that the chosen concepts are sound and will operate in the EPA environment. The demonstration must be closely supervised to determine actual cost and time to perform any conversion activities and operating time required to demonstrate the concept. EPA should select a portion of their existing activity that can be made operational using the selected concepts within a reasonable period of time. The selected activity should be such that a demonstration would be meaningful in reducing questions of risk and establish a solid baseline for estimating time and cost to become fully operational.

6.5 FULL-SCALE DEVELOPMENT/INITIAL PRODUCTION

This stage of the process has the most effect on the system users for it includes the conversion of existing applications to the new hardware and design concept. EPA's history regarding conversion has not been favorable, particularly the conversion to the UNIVAC equipment. The actual conversion activity should be such as to permit operations on current equipment until the replacement application is fully tested and proven operational. One of the methods which could be used is to operate parallel systems for a short period of time and compare all output activities and internal data files. A conversion which stops current operations for any period of time will be looked on by the user staff as totally unsuccessful.

Plans should be made as early as possible to maintain the current EPA hardware until the replacement applications are fully operational. Depending on the speed with which the program is approved and the new equipment selected, this may be an extension of 1 to 3 years beyond 1982.

6.6 FULL-SCALE PRODUCTION

Following the successful conversion and initial testing of an operational capability, the existing EPA applications and any new applications will be operated using the new system design concepts and equipment. New applications required after the final selection of a system design concept and equipment will be developed for that concept and equipment, thus, no conversion will be necessary.

It is planned that the contract for full scale production will be for a period of ten years. However, EPA must build in some key milestone dates in which to review the contractor's performance, with an option to replace the personnel, but not necessarily the equipment, if necessary. During this ten year period, there will be a need to expand the hardware to meet the increasing demand for services. These expansions should be planned and options provided in the final contract to provide for an expansion capability.

6.7 OTHER FACTORS

At the current and projected rate of growth the two existing facilities will be unable to meet all of the data processing requirements in 1982. This is when the planned replacement system is currently scheduled for installation. If the schedule slips, the new system may not be available until 1983 or later. EPA has a number of options as to how to handle the situation. The two most extreme are to restrict growth to the existing capabilities or to obtain additional equipment and services. Another alternative is that EPA may rent available computer time at other government installations or commercially on a short

term contract. If this be the case, EPA should plan carefully the selection of those applications that would be transferred to other installations.